

GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:31:03 ; Search time 93.91 Seconds

(Without alignments)
172.684 Million cell updates/sec

Title: US-09-802-365-2

Perfect score: 787
Sequence: 1 PALPEDGSGAPPGHFKDP.....GPKTGGCAILFLPMSAKS 146

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 747574 seqs, 11073796 residues

Total number of hits satisfying chosen parameters: 747574

Minimum DB seq length: 0
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%
Maximum Match 100%

Listing first 45 summaries

Database :

A_Geneseq_032802:*

- 1: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1980.DAT:*
- 2: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1981.DAT:*
- 3: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1982.DAT:*
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- 5: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1984.DAT:*
- 6: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1985.DAT:*
- 7: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1986.DAT:*
- 8: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1987.DAT:*
- 9: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1988.DAT:*
- 10: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1989.DAT:*
- 11: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1990.DAT:*
- 12: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1991.DAT:*
- 13: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1992.DAT:*
- 14: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1993.DAT:*
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- 19: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1998.DAT:*
- 20: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA1999.DAT:*
- 21: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA2000.DAT:*
- 22: /SIDSL/gcgdata/hold-geneseq/geneseq-emb1/AA2001.DAT:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	787	100.0	146	8	AA171145
2	787	100.0	146	13	AA171145
3	787	100.0	146	13	AA171145
4	787	100.0	146	21	AA171145
5	787	100.0	146	21	AA171145
6	787	100.0	146	22	AA171145
7	787	100.0	147	9	AA171145
8	787	100.0	147	10	AA171145
9	787	100.0	155	8	AA171145
10	787	100.0	155	18	AA171145
11	787	100.0	155	22	AA171145

12	787	100.0	273	22	AA171145	3-D structure, de
13	776	98.6	146	9	AA171145	Human basic fibro
14	776	98.6	146	13	AA171145	bFGF derivative.
15	776	98.6	146	21	AA171145	Human FGF-2 protei
16	776	98.6	146	22	AA171145	Human fibroblast g
17	776	98.6	146	22	AA171145	Human basic insul
18	776	98.6	148	13	AA171145	bFGF truncated at
19	776	98.6	153	16	AA171145	Human basic fibrob
20	776	98.6	154	16	AA171145	Human basic fibrob
21	776	98.6	154	17	AA171145	Human basic fibrob
22	776	98.6	155	8	AA171145	Sequence of human
23	776	98.6	155	10	AA171145	Human basic fibrob
24	776	98.6	155	11	AA171145	Human basic fibrob
25	776	98.6	155	13	AA171145	bFGF truncated at
26	776	98.6	155	14	AA171145	Human bFGF peptide
27	776	98.6	155	15	AA171145	glu3.5 hbpFGF. Hom
28	776	98.6	155	15	AA171145	Fibroblast growth
29	776	98.6	155	16	AA171145	Human bFGF. Homo
30	776	98.6	155	16	AA171145	FGF-2. Homo sapie
31	776	98.6	155	16	AA171145	Human fibronectin
32	776	98.6	155	18	AA171145	Biologically activ
33	776	98.6	155	18	AA171145	Fibronectin recept
34	776	98.6	155	19	AA171145	Fibroblast growth
35	776	98.6	155	19	AA171145	SVV mutant of fibr
36	776	98.6	155	19	AA171145	18 kDa form of fib
37	776	98.6	155	19	AA171145	Fibroblast growth
38	776	98.6	155	20	AA171145	18 kD isoform of h
39	776	98.6	155	21	AA171145	Fibroblast growth
40	776	98.6	155	21	AA171145	Human fibroblast g
41	776	98.6	155	21	AA171145	Human fibroblast g
42	776	98.6	155	21	AA171145	Human fibroblast g
43	776	98.6	155	21	AA171145	FGF-2 (bFGF), SEQ
44	776	98.6	155	21	AA171145	Human FGF-2 (bFGF)
45	776	98.6	155	21	AA171145	Human fibroblast g

ALIGNMENTS

RESULT 1	AA171145	standard; protein: 146 AA.
ID	AA171145	
AC	AA171145	
XX	11-MAR-1991	(first entry)
DE	Basic fibroblast growth factor.	
DE	Basic fibroblast growth factor.	
KW	Mitogenic; angiogenic; bFGF.	
OS	Bos taurus.	
XX	W08607595-A.	
XX	31-DEC-1986.	
XX	18-JUN-1986;	86WO-US01318.
XX	20-JUN-1985;	85US-0747154.
XX	(SALK) SALK INST FOR BIOL STUD.	
XX	Esch FS, Bohnen P, Baird A, Gospodarowicz DJ, Ling NCK;	
XX	WPI. 1987-007193/01.	
XX	Pure basic fibroblast growth factor - produced by inserting	
XX	synthesised DNA chain into cloning vector and producing	
XX	transformed cell lines.	
XX	Claim 1; Page 24; 29pp; English.	

CC may be used in a pharmaceutical composition for diagnostic or
 CC therapeutic uses. This may be used in in vitro cell proliferation
 CC procedures, eg. nerve regeneration and wound healing.

SO Sequence 146 AA:

Query Match 100.0%; Score 787; DB 13; Length 146;
 Best Local Similarity 100.0%; Pred. No. 5e-78;
 Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PALPDGSGAPPGPHFDPKRLYCKNGGFLRIHPDGRVDGVRKSDPHIKLQQAER 60
 Db 1 palpedgsgaIppghfkdprkrlYcknggfflrlhpdgvdgvrksdphiklqqaer 60
 OY 61 GVVSIKGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRKYSSWYVALKR 120
 Db 61 gvsikgvcanrylamkedgrllaskcvrdecefferlesnnyntyrskyswyvalkr 120
 OY 121 TGQYRLGPKTGPQKAILFLPMSAKS 146
 Db 121 tgqyrlgpktpgqkailflpmsaks 146

RESULT 4
 AAY87848
 ID AAY87848 standard; protein; 146 AA.

AC AAY87848;

DT 01-SEP-2000 (first entry)

DE Bovine FGF-2 protein.

KM FGF-2; fibroblast growth factor; Cardiant; treatment; angiogenesis;
 KM coronary artery disease; myocardial infarction injury; bovine.

OS Bos taurus.

PN WO200021548-A2.

PD 20-APR-2000.

PF 13-OCT-1999; 99WO-US22936.

PR 13-OCT-1998; 98US-0104103.

PA (CHIR) CHIRON CORP.

PA (WHIT/) WHITEHOUSE M J.

PI Kavanaugh WM;

PR WPI: 2000-317840/27.

DR N-PSDB; AAA39555.

PT Novel unit dose comprising fibroblast growth factor, its angiogenically
 PT active fragment or mutain for inducing cardiac angiogenesis, treating
 PT coronary artery disease and reducing post myocardial infarction injury

PS Claim 1; Page 58; 67pp; English.

CC This invention describes a novel unit dose (I), of fibroblast growth
 CC factor (FGF) comprising 0.008-6.1 mg of a mammalian FGF comprising
 CC sequence of 140 ((II) and (III)) 146 ((IV) and (V)), 205 (VI), 266
 CC (VII), 207 ((VIII) and (XI)), 215 (IX), and 208 (X) amino acids (aa),
 CC given in the specification, its angiogenically active fragment or
 CC mutain. The product of the invention has angiogenic and cardiant
 CC activity. (I) is used for treating a human patient for coronary artery
 CC disease, and inducing angiogenesis in the human heart. (I) further
 CC provides an adjunct for reducing post myocardial infarction injury in
 CC humans. The unit dose provides the human patient with a rapid and
 CC therapeutic cardiac angiogenesis sufficient to obviate surgical

CC intervention and results in an superior increase in the treated
 CC patients's exercise tolerance time (ETI). It also provides a safe and
 CC therapeutically efficacious treatment for the patients with coronary
 CC artery disease that lasts at least 6 months before a further treatment
 CC is needed. The method provides superior increase of 1.5-2 minutes in
 CC the treated patient's (ETI), compared to an increase of 30 seconds for
 CC current modes treatment. This sequence represents the bovine FGF-2
 CC protein fragment described in the method of the invention.

SO Sequence 146 AA:

Query Match 100.0%; Score 787; DB 21; Length 146;
 Best Local Similarity 100.0%; Pred. No. 5e-78;
 Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PALPDGSGAPPGPHFDPKRLYCKNGGFLRIHPDGRVDGVRKSDPHIKLQQAER 60
 Db 1 palpedgsgaIppghfkdprkrlYcknggfflrlhpdgvdgvrksdphiklqqaer 60
 OY 61 GVVSIKGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRKYSSWYVALKR 120
 Db 61 gvsikgvcanrylamkedgrllaskcvrdecefferlesnnyntyrskyswyvalkr 120
 OY 121 TGQYRLGPKTGPQKAILFLPMSAKS 146
 Db 121 tgqyrlgpktpgqkailflpmsaks 146

RESULT 5
 AAY81941
 ID AAY81941 standard; protein; 146 AA.

AC AAY81941;

DT 30-JUN-2000 (first entry)

DE Recombinant bovine FGF-2 protein sequence.

KM FGF-2; cow; fibroblast growth factor 2; angiogenesis; unstable angina;
 KM coronary artery disease; human; acute myocardial infarction; therapy.

OS Bos taurus.

PN WO200013701-A2.

PD 16-MAR-2000.

PF 27-AUG-1999; 99WO-US19770.

PR 03-SEP-1998; 98US-0145743.

PR 13-OCT-1998; 98US-0104102.

PR 13-OCT-1998; 98US-0104103.

PA (CHIR) CHIRON CORP.

PA (WHIT/) WHITEHOUSE M J.

DR WPI: 2000-256860/22.

DR N-PSDB; AAA07355.

PS Claim 3; Page 58-59; 60pp; English.

CC Composition for inducing angiogenesis or treating coronary artery
 CC disease comprises fibroblast growth factor-2 or angiogenically active
 CC fragment or mutain -
 CC This sequence represents a recombinant bovine fibroblast growth factor-2
 CC (FGF-2) sequence. The invention relates to a unit dose composition
 CC (I) for inducing angiogenesis in a human, comprising 0.008-7.2 mg of
 CC FGF-2 or an angiogenically active fragment or mutain of FGF-2. The
 CC composition (I) and recombinant FGF-2 are useful for treating coronary
 CC artery disease or inducing angiogenesis in a human patient. Recombinant
 CC FGF-2 may be used to treat unstable angina and acute myocardial


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RESULT 10
AAM20029
ID AAM20029 standard; Protein: 155 AA.
XX
AC AAM20029;
XX
DT 18-SEP-1997 (first entry)
XX
DE Recombinant bovine basic fibroblast growth factor.
XX
KM FGF; fibroblast growth factor; basic; acidic; wound healing;
KM neurodegenerative disease; Parkinson's; Alzheimer's disease;
KM bone fracture; biologically active; embolism.
XX
OS Bos taurus.
XX
FH Key Location/Qualifiers
FT Peptide 1..9
FT /label= sig_peptide
FT Protein 10..155
FT /label= mat_protein
XX
PM US5604293-A.
XX
PD 18-FEB-1997.
XX
PF 12-SEP-1985; 85US-0775521.
XX
PR 15-MAY-1987; 87US-0050706.
PR 12-SEP-1985; 85US-0775521.
PR 16-DEC-1985; 85US-0809163.
PR 30-MAY-1986; 86US-0869382.
PR 30-MAR-1992; 92US-0860688.
PR 01-APR-1994; 94US-0221462.
XX
PA (SCTO-) SCTOS INC.
XX
PI Abraham JA, Fiddes JC;
XX
DR WPI: 1997-234676/21.
DR N-PSDB: AAT71236.
XX
PT New high purity, recombinant human basic fibroblast growth factor -
PT for promoting wound healing and treating neurodegenerative
PT diseases, suitable for production on large scale
XX
PS Example 5; Fig 3; 34pp; English.
XX
CC AAM20029 is a recombinant bovine basic fibroblast growth factor (bFGF).
CC Recombinant bFGF is used to promote healing of wounds, bone fractures,
CC damaged myocardial tissue etc. and, since it increases neuronal
CC survival and promotes neurite outgrowth, may also be used in treatment
CC of neurological disorders such as Alzheimer's and Parkinson's diseases.
CC bFGF may also be used for detection of specific inhibitors; for
CC treatment of cell cultures in vitro before transplant and for inducing
CC release of tissue plasminogen activator or collagenase, e.g. for
CC treatment of a chronic tendency to form embolism. Recombinant bFGF can
CC be produced on a large scale.
XX
SQ Sequence 155 AA;
Query Match 100.0%; Score 787; DB 18; Length 155;
Best Local Similarity 100.0%; Pred. No. 5.4e-78;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 PALPDEGGGAGFPFGHFKPKRILYCKNGGFLLRIHPDGVGVGKREKSDPHIKQLQAEER 60
DB 10 palpedggsaifppghfkpkrllycknggffllrhpdgrrvdyreksdphiklqlgaeer 69
QY 61 GVSISIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYRSRKYSWYVALKR 120
DB 61 GVSISIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYRSRKYSWYVALKR 120
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DB 70 gvsikgyvcanylamkedgrllaskcvtdceffierlesnnytlzrskyswyvalkr 129
QY 121 TGQYKLGPRTPGQKAILFLPMSAKS 146
DB 130 tgqyklgprtktpgqkailflpmsaks 155
RESULT 11
AAE11975
ID AAE11975 standard; Protein: 155 AA.
XX
AC AAE11975;
XX
DT 18-DEC-2001 (first entry)
XX
DE Bovine fibroblast growth factor-2 (FGF-2) #2.
XX
KM Bovine; therapy; erectile dysfunction; fibroblast growth factor-2; FGF-2;
KM epidermal growth factor; BGF; platelet derived growth factor; PDGF;
KM vascular endothelial growth factor; VEGF; tissue growth factor; TGF;
KM Impotence; vasotropic.
XX
OS Bos taurus.
XX
PM WO200168125-A2.
XX
PD 20-SEP-2001.
XX
PF 09-MAR-2001; 2001WO-US07702.
XX
PR 10-MAR-2000; 2000US-188480P.
PR 11-MAY-2000; 2000US-203415P.
XX
PA (CHIR ) CHIRON CORP.
XX
PI Whitehouse MJ;
XX
DR WPI: 2001-616273/71.
DR N-PSDB: AAD19522.
XX
PT Treating or preventing erectile dysfunction, comprises administering
PT growth factor, particularly fibroblast growth factor to blood vessels
PT in the penis, groin or leg
XX
PS Claim 6; Page 33; 35pp; English.
XX
CC The present invention relates to a method for treating or preventing
CC erectile dysfunction, comprising administering a fibroblast growth
CC factor (FGF), epidermal growth factor (EGF), platelet derived growth
CC factor (PDGF), vascular endothelial growth factor (VEGF) or tissue
CC growth factor (TGF). The invention is used to treat or prevent erectile
CC dysfunction, or impotence. The present sequence is a bovine FGF-2
CC protein.
XX
SQ Sequence 155 AA;
Query Match 100.0%; Score 787; DB 22; Length 155;
Best Local Similarity 100.0%; Pred. No. 5.4e-78;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 PALPDEGGGAGFPFGHFKPKRILYCKNGGFLLRIHPDGVGVGKREKSDPHIKQLQAEER 60
DB 10 palpedggsaifppghfkpkrllycknggffllrhpdgrrvdyreksdphiklqlgaeer 69
QY 61 GVSISIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYRSRKYSWYVALKR 120
DB 70 gvsikgyvcanylamkedgrllaskcvtdceffierlesnnytlzrskyswyvalkr 129
QY 121 TGQYKLGPRTPGQKAILFLPMSAKS 146
DB 130 tgqyklgprtktpgqkailflpmsaks 155
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RESULT 12
AAB49978
ID AAB49978 standard; peptide: 273 AA.
XX
AC AAB49978;
XX
DT 08-MAR-2001 (first entry)
XX
DE 3-D structure determining method protein #7.
XX
KW Macromolecule: 3-dimensional structure; protein conformation; proteomics.
XX
OS unidentified.
XX
PN WO200072004-A2.
XX
PD 30-NOV-2000.
XX
PF 26-MAY-2000; 2000WO-US14667.
XX
PR 26-MAY-1999; 99US-0135891.
XX
PA (REGC ) UNIV CALIFORNIA.
XX
PI Gibson BW, Kuntz ID, Tang N, Dollinger G, Oshiro CM, Hempel JC;
PI Taylor E;
XX
DR WPI: 2001-049881/06.
XX
PT Determining three dimensional structure of polypeptide or nucleic acid
PT molecules, by use of an integrated technique of determining physical
PT distance constraints and analysis of constraint information -
XX
PS Example 2; Fig 20; 80pp: English.
XX
ES
XX
CC The present invention describes a novel method for determining the
CC 3-dimensional structure of a macromolecule, particularly a protein. The
CC method involves generating intramolecular crosslinks of known length
CC between the residues of the protein, separating those proteins containing
CC intramolecular bonds, exposing these to a protease so that peptide
CC fragments are produced, identifying these fragments so that their
CC position within the protein is known, and interpreting the data to
CC determine the protein structure. This method can be used in the study of
CC proteomic and genomic information.
XX
SQ Sequence 273 AA:

Query Match 100.0%; Score 787; DB 22; Length 273;
Best Local Similarity 100.0%; Pred. No. 1.1e-77;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PALPEDGSGAAPPGHFDPKRLKCKNGGFLRIHPDGRVGVREKSDPHIKLQQAER 60
DB 1 palpedgsgsalppghfdpkrlkcknggflrlnpdgrvdrvreksdphiklqqaer 60
OY 61 GVVSIRKGYCANRYLAMKEDGRLLASKCVTDECFEPERLESNNYNTYRSRKYSSWYALKR 120
DB 61 gvvsirkgycanrylamkedgrllaskcvldecffierlesnnyntyrskyswyaltr 120
OY 121 TGOYKLGPKTGPQKAILFLPMsAKS 146
DB 121 tqgylgpktpgqkailflpmaks 146

RESULT 13
AAP82579
ID AAP82579 standard; protein: 146 AA.
XX
AC AAP82579;
XX
DT 02-NOV-1990 (first entry)
XX
```

```
XX
DE Human basic fibroblast growth factor.
XX
KW Basic fibroblast growth factor; anticancer agent; bFGF.
XX
OS Homo sapiens.
XX
PN EP288687-A.
XX
PD 02-NOV-1988.
XX
PF 01-MAR-1988; 88EP-0103047.
XX
PR 03-MAR-1987; 87JP-0049759.
PR 26-AUG-1987; 87JP-0211599.
PR 26-JAN-1988; 88JP-0016260.
XX
PA (TAKE ) TAKEDA CHEMICAL IND KK.
XX
PI Iwane M, Kurokawa T, Igarashi K;
XX
DR WPI: 1988-308739/44.
DR N-PSDB: AAN82192.
XX
PT New monoclonal antibodies specific for basic fibroblast growth
PT factor - used in immunoassay, purification, and as anticancer agent.
XX
PS Disclosure: ; p; English.
XX
CC DNA encoding the protein was isolated from a cDNA library prep.
CC from mRNA from human foreskin derived primary culture cell. It
CC can be used to produce recombinant hbFGF for prodn. of MAb's
CC specific for bFGF (do not cross react with acidic FGF). High
CC purity bFGF is also useful for promoting healing of burns and
CC wounds and, due to its neovascularising action, to treat thrombosis
CC and arteriosclerosis.
CC See also AAN82193 and AAN82194.
XX
SQ Sequence 146 AA:

Query Match 98.6%; Score 776; DB 9; Length 146;
Best Local Similarity 98.6%; Pred. No. 7.9e-77;
Matches 144; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY 1 PALPEDGSGAAPPGHFDPKRLKCKNGGFLRIHPDGRVGVREKSDPHIKLQQAER 60
DB 1 palpedgsgsalppghfdpkrlkcknggflrlnpdgrvdrvreksdphiklqqaer 60
OY 61 GVVSIRKGYCANRYLAMKEDGRLLASKCVTDECFEPERLESNNYNTYRSRKYSSWYALKR 120
DB 61 gvvsirkgycanrylamkedgrllaskcvldecffierlesnnyntyrskyswyaltr 120
OY 121 TGOYKLGPKTGPQKAILFLPMsAKS 146
DB 121 tqgylgsktpgqkailflpmaks 146

RESULT 14
AAR25423
ID AAR25423 standard; protein: 146 AA.
XX
AC AAR25423;
XX
DT 06-JAN-1993 (first entry)
XX
DE bFGF derivative.
XX
KW Human; basic fibroblast growth factor; recombinant; wound healing;
XX revascularise; regenerate; neural tissue;.
XX
OS Homo sapiens.
XX
```

FN	Key	Location/Qualifiers
FT	Modified-site	69
FT	Modified-site	/note= "derivatised with an agent capable of forming a covalent S-C bond with Cys"
FT	Modified-site	89
FT	Modified-site	/note= "derivatised with an agent capable of forming a covalent S-C bond with Cys"
XX		
PN	EP494664-A.	
PD	15-JUL-1992.	
XX		
PE	09-JAN-1992;	92EP-0100257.
XX		
PR	09-JAN-1991;	91GB-0000381.
XX		
PA	(FARM) FARMITALIA ERBA SRL CARLO.	
PI	Bertolero F, Caccia P, Cauet G, Nitti G;	
DR	WPI: 1992-235730/29.	
XX		
XX		
PT	Derived basic fibroblast growth factor - for treating ulcers,	
PT	regenerating damaged neural tissue, aiding tissue transplant or	
PT	bone graft and revascularising ischaemic tissue	
XX		
PS	Claim 2; Page 3; 20pp; English.	
XX		
CC	The sequence is that of a recombinant human basic fibroblast growth	
CC	factor which has at least on of the four cysteine residues (pref.	
CC	Cys 69 and Cys 87) derivatised with an agent able to form a covalent	
CC	S-C bond with Cys. Typical agents include iodacetic acid,	
CC	haloacetamide, alkyl tetrahalomates, alkyl methanethiosulphonates	
CC	and 1-6C alkylsulphonates. The derivatised bFGF is used to accelerate	
CC	the healing of wounds (including burns, ulcers, transplants, and	
CC	bone grafts), to revascularise ischaemic tissue or to regenerate	
CC	damaged neural tissue. Compared with native bFGF the recombinant	
CC	derivatised bFGF has better biological activity and stability (esp.	
CC	not aggregating by dimer formation) and is also easier to isolate.	
XX		
XX	Sequence 146 AA;	
SO		
Query Match	98.6%: Score 776; DB 13; Length 146;	
Best Local Similarity	98.6%: Pred. No. 7.9e-77;	
Matches 144; Conservative 1; Mismatches 1; Indels 0; Gaps		
QY	1 PALPEDGSGAFPFGHFDPRKLYCKNGGFFULRHPDGRVDSVREKSDPHIKLOLQAEER	60
Db	1 palpedgsgsgafpphfdprklycknggffilrhpdgvdgvsdpshiklqjaeer	60
QY	61 GVSYSKGVCAARRYLKMKEDGRLAKSCYTDDEFFFEERLESNNYRKRKYSWYALNR	120
Db	61 gvsyskgyvcarrylamkedgrllaskcvrdeciflerlesnnyrskrkysswyvalxr	120
QY	121 TGQYKLGKPTGPGGKAILFLPMASAKS	146
Db	121 tgykylgsktpgpgkailflpmsaks	146
RESULT 15		
AA87847	AA87847 standard; protein; 146 AA.	
XX		
AC	AA87847;	
XX		
DT	01-SEP-2000 (first entry)	
XX		
DE	Human FGF-2 protein.	
XX		
KW	FGF-2; fibroblast growth factor; cardiant; treatment; angiogenesis;	
KW	coronary artery disease; myocardial infarction injury; human.	

Query Match	98.6%	Score 776	DB 21	Length 146
Best Local Similarity	98.6%	Pred. No. 7.9e-77		
Matches 144	Conservative 1	Mismatches 1	Indels 0	Gaps 0
QY	1	PAIPDDGGSGAPRRPFHFDPRKLYCKNGGFEFRHHPDGRVDVREKSDPHIKLOAEER	60	
Db	1	palpddgsgaaprrpfhfdprklycknggfeffrhhpddgvdvrekspdhilqlgaer	60	
QY	61	GVASTKGCANRYLLMKEDGRLLASLCYDECFPERLESNNYNTYRSRRYSSWVALMR	120	
Db	61	gvastkgycanryllmkedgrllaskcvrdecffeerlesnnynctyrskyswvalxr	120	
QY	121	TGQYKLGPRKTEGOKAIIFLPMSAS	146	
Db	121	tgykllgsktgpqgkaiiflpmsaks	146	

Search completed: June 7, 2002, 14:35:39
Job time: 276 sec

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:33:13 ; Search time 47.03 Seconds
(without alignments)
298.300 Million cell updates/sec

Title: US-09-802-365-2

Perfect score: 787

Sequence: 1 PALPEDGSGAFPPGHFKDP.....GPKTPGQKALFLPMsAKS 146

Scoring table:

BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283138 seqs, 96089334 residues

Total number of hits satisfying chosen parameters: 283138

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Database :

PIR_71:*
1: p1r1:*
2: p1r2:*
3: p1r3:*
4: p1r4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	787	100.0	157	1 GKB0B	basic fibroblast g
2	781	99.2	146	1 S00185	basic fibroblast g
3	776	98.6	210	1 A3239E	basic fibroblast g
4	759.5	96.5	154	2 A31674	basic fibroblast g
5	754.5	95.9	154	2 C37360	basic fibroblast g
6	736	93.5	137	2 I46711	fibroblast growth
7	734	93.3	189	2 A48834	basic fibroblast g
8	717.5	91.2	164	2 S31622	basic fibroblast g
9	644	81.8	155	1 A40117	basic fibroblast g
10	425.5	54.1	125	2 A32464	basic fibroblast g
11	405	51.5	155	1 A60721	acidic fibroblast
12	395	50.2	155	1 A33665	acidic fibroblast
13	392.5	49.9	155	2 A60130	acidic fibroblast
14	391	49.7	155	2 S04147	acidic fibroblast
15	391	49.7	155	2 D37360	acidic fibroblast
16	389	49.4	152	2 JH0476	acidic fibroblast
17	387	49.2	153	2 JH0055	acidic fibroblast
18	384	48.8	155	1 GKB0A	acidic fibroblast
19	352	32.0	194	2 S07110	fibroblast growth
20	251.5	32.0	256	2 J04627	fibroblast growth
21	249.5	31.7	264	2 A36207	fibroblast growth
22	249.5	31.7	266	2 S68144	fibroblast growth
23	246	31.3	220	2 I50388	fibroblast growth
24	245.5	31.2	206	2 TV03H8	fibroblast growth
25	245	31.1	208	2 S20102	fibroblast growth
26	245	31.1	208	2 S14192	fibroblast growth
27	242.5	30.8	267	2 J04268	fibroblast growth
28	241	30.6	267	1 TV04H8	fibroblast growth
29	236	30.0	187	2 S23595	embryonic fibrobla

30	235.5	29.9	237	1 S39582	transforming prote
31	235	29.9	245	1 TVMSF2	transforming prote
32	234	29.7	239	1 S04742	fibroblast growth
33	232.5	29.5	202	1 TVMSHS	fibroblast growth
34	231.5	29.4	192	2 S54407	embryonic fibrobla
35	215	27.3	208	2 S66486	fibroblast growth
36	209	26.6	211	2 J07353	fibroblast growth
37	209	26.3	208	2 J07082	fibroblast growth
38	206.5	26.2	207	2 J05940	fibroblast growth
39	206.5	26.1	207	2 J05941	fibroblast growth
40	205.5	26.0	194	2 I48610	keratinocyte growt
41	204.5	25.8	212	2 J07511	fibroblast growth
42	203	25.7	194	1 A36301	fibroblast growth
43	202.5	25.7	194	2 S26049	fibroblast growth
44	202.5	25.7	194	2 S49501	keratinocyte growt
45	202.5	25.7	194	2 S49501	keratinocyte growt

ALIGNMENTS

RESULT 1

GKB0B
basic fibroblast growth factor precursor - bovine (fragment)
N:Alternate names: bFGF; kidney-derived growth factor; prostatiopin
C:Species: Bos primigenius taurus (cattle)
C:Date: 13-Aug-1986 #sequence.revision 02-Jun-1995 #text.change 24-Nov-1999
C:Accession: A24663; A32878; A33784; A61550; A61551; A60310; A61094; A01366; A60316;
R:Abraham, J.A.; Mergia, A.; Whang, J.L.; Tumbolo, A.; Friedman, J.; Hjertild, K.A.; G
Science 233, 545-548, 1986
A:Title: Nucleotide sequence of a bovine clone encoding the angiogenic protein, basic
A:Reference number: A94290; MUID:86261806
A:Accession: A24663
A:Molecule type: mRNA
A:Residues: 3-157 <ABR>
A:Cross-references: GB:M13440; NID:g163049; PIDN:AAA30518.1; PID:g163050
A:Experimental source: Pituitary gland
R:Abraham, J.A.; Whang, J.L.; Tumbolo, A.; Mergia, A.; Fiddes, J.C.
Cold Spring Harb. Symp. Quant. Biol. 51, 657-668, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence, genomic organizat
A:Reference number: A90924; MUID:8721066
A:Accession: A32878
A:Molecule type: mRNA
A:Residues: 3-157 <ABR2>
R:Miller, P.G.; Li, Y.S.; Hoffman, R.M.; Kodner, C.M.; Siegel, N.R.; Denel, T.F.
Biochem. Biophys. Res. Commun. 165, 1096-1103, 1989
A:Title: A novel 17 KD heparin-binding growth factor (HBGF-8) in bovine uterus: purif
A:Reference number: A33784; MUID:90121211
A:Accession: A33784
A:Molecule type: protein
A:Residues: 1-14 <MIT>
A>Note: demonstration of a possible alternative initiator or splice junction
R:Berthelin, J.; Hearn, M.T.W.
Mol. Cell. Endocrinol. 51, 187-199, 1987
A:Title: Isolation, characterization and tissue localisation of an N-terminal-truncat
A:Reference number: A61550; MUID:87247652
A:Accession: A61550
A:Molecule type: protein
A:Residues: 16-35 <BER>
R:Ueno, N.; Baird, A.; Esch, F.; Ling, N.; Guillemin, R.
Mol. Cell. Endocrinol. 49, 189-194, 1987
A:Title: Isolation and partial characterization of basic fibroblast growth factor fro
A:Reference number: A61551; MUID:87162856
A:Accession: A61551
A:Molecule type: protein
A:Residues: 27-35, 'X', 37-41 <UB3>
A:Experimental source: testes
A>Note: this form appears to be identical to the renal form
R:Ueno, N.; Baird, A.; Esch, F.; Shimasaki, S.; Ling, N.; Guillemin, R.
Regul. Pept. 16, 135-145, 1986
A:Title: Purification and partial characterization of a mitogenic factor from bovine
A:Reference number: A60310; MUID:87119165
A:Accession: A60310

A:Molecule type: protein
 A:Residues: 23-35,'X',37-42 <UEN>
 A:Experimental source: liver
 R:Ueno, N.; Baird, A.; Esch, F.; Ling, N.; Guillemain, R.
 Blochem. Biophys. Res. Commun. 138, 580-588, 1986
 A:Title: Isolation of an amino terminal extended form of basic fibroblast growth factor.
 A:Reference number: A24819; MUID:86295737
 A:Contents: annotation
 A:Note: the amino end of this form was blocked; the peptide composition matched what was
 R:Gospodarowicz, D.; Baird, A.; Cheng, J.; Lui, G.M.; Esch, F.; Bohlen, P.
 Endocrinology 118, 82-90, 1986
 A:Title: Isolation of fibroblast growth factor from bovine adrenal gland: physicochemical
 A:Reference number: A61094; MUID:86081530
 A:Accession: A61094
 A:Molecule type: protein
 A:Residues: 12-25,27-35,'X',37-40 <GOS>
 A:Experimental source: adrenal gland
 R:Esch, F.; Baird, A.; Ling, N.; Ueno, N.; Hill, F.; Denoroy, L.; Klepper, R.; Gospodarowicz, F.
 Proc. Natl. Acad. Sci. U.S.A. 82, 6507-6511, 1985
 A:Title: Primary structure of bovine pituitary basic fibroblast growth factor (FGF) and
 A:Reference number: A01386; MUID:86016731
 A:Accession: A01386
 A:Molecule type: protein
 A:Residues: 12-157 <ESC>
 A:Experimental source: pituitary gland
 R:Baird, A.; Esch, F.; Bohlen, P.; Ling, N.; Gospodarowicz, D.
 Regul. Pept. 12, 201-213, 1985
 A:Title: Isolation and partial characterization of an endothelial cell growth factor from
 A:Reference number: A60316; MUID:86095426
 A:Accession: A60316
 A:Molecule type: Protein
 A:Residues: 27-35,'X',37-43 <BAI>
 A:Experimental source: Kidney
 R:Bohlen, P.; Baird, A.; Esch, F.; Ling, N.; Gospodarowicz, D.
 Proc. Natl. Acad. Sci. U.S.A. 81, 5364-5368, 1984
 A:Title: Isolation and partial molecular characterization of pituitary fibroblast growth
 A:Reference number: A22054; MUID:84298139
 A:Accession: A22054
 A:Molecule type: protein
 A:Residues: 12-26 <BOH>
 C:Comment: The acidic and basic fibroblast growth factors are the major endothelial cell
 cell types in vitro (although bFGF is 30-100 times more potent than aFGF in stimulating the
 C:Comment: This protein binds heparin more strongly than does aFGF.
 C:Superfamily: fibroblast growth factor
 C:Keywords: alternative splicing; angiogenesis; blocked amino end; growth factor; heparin
 F:1-157/Product: basic fibroblast growth factor, uterine form #status predicted <MAT1>
 F:4-157/Product: basic fibroblast growth factor, pituitary gamma form #status experiment
 F:12-157/Product: basic fibroblast growth factor, pituitary alpha form #status experiment
 F:16-157/Product: basic fibroblast growth factor, pituitary short form #status predicted
 F:23-157/Product: basic fibroblast growth factor, hepatic form #status experimental <MAT6>
 F:27-157/Product: basic fibroblast growth factor, renal form #status experimental
 F:29-33,118-121/Region: heparin binding #status predicted
 F:4/Modified site: blocked amino end (Ala) (in mature form pituitary gamma) (probably ac

500185
 basic fibroblast growth factor - sheep
 N:Alternate names: prostatictrophin
 C:Species: Ovis orientalis aries, Ovis ammon aries (domestic sheep)
 C>Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
 C:Accession: S00185
 R:Stimpson, R.J.; Moritz, R.L.; Lloyd, C.J.; Fabri, L.J.; Nice, E.C.; Rubbra, M.R.; Bu
 FBS Lett. 224, 128-132, 1987
 A:Title: Primary structure of ovine pituitary basic fibroblast growth factor.
 A:Reference number: S00185; MUID:88055577
 A:Accession: S00185
 A:Molecule type: protein
 A:Residues: 1-146 <SIM>
 C:Superfamily: fibroblast growth factor
 C:Keywords: growth factor; heparin binding; mitogen
 F:18-22/Region: heparin binding #status predicted
 F:107-110/Region: heparin binding #status predicted

Query Match 99.28; Score 781; DB 1; Length 146;
 Best Local Similarity 99.38; Pred. NO. 1.3e-70;
 Matches 145; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 1 PALPEDGSGAFPPGHPKRPKRLCKNGGFRLRHPDGVGVREKSDPHIKLQDAEER 60
 Db 1 PALPEDGSGAFPPGHPKRPKRLCKNGGFRLRHPDGVGVREKSDPHIKLQDAEER 60
 QY 61 GVSISIKGCANRYLAMKEDGRFLASKCVTDCEFFERLESNNYNTYRSRKYSSWYVALKR 120
 Db 61 GVSISIKGCANRYLAMKEDGRFLASKCVTDCEFFERLESNNYNTYRSRKYSSWYVALKR 120
 QY 121 TGOYKLGPKTGPGRKAILFLPMSAKS 146
 Db 121 TGOYKLGPKTGPGRKAILFLPMSAKS 146

RESULT 3
 A32398
 basic fibroblast growth factor precursor, 22.5K form - human
 N:Alternate names: bFGF; fibroblast growth factor 2; prostatic growth factor; prostatic
 N:Contains: basic fibroblast growth factor, 18K form
 C:Species: Homo sapiens (man)
 C>Date: 31-Jul-1989 #sequence_revision 31-Dec-1993 #text_change 21-Jul-2000
 C:Accession: A32398; A61537; A26642; B32878; S00297; A54316; B54316; A33624; A25824;
 R:Pratts, H.; Kaghad, M.; Prats, A.C.; Klagsbrun, M.; Lelias, J.M.; Liauzun, P.; Chailo
 Proc. Natl. Acad. Sci. U.S.A. 86, 1836-1840, 1989
 A:Title: High molecular mass forms of basic fibroblast growth factor are initiated by
 A:Reference number: A32398; MUID:89184522
 A:Accession: A32398
 A:Molecule type: mRNA
 A:Residues: 1-210 <PRA>
 A:Cross-references: GB:J04513; NID:G183083; PIDN:AAA52531.1; PID:G459811
 R:Shibata, F.; Baird, A.; Florkiewicz, R.Z.
 Growth Factors 4, 277-287, 1991
 A:Title: Functional characterization of the human basic fibroblast growth factor gene
 A:Reference number: A61537; MUID:92110035
 A:Accession: A61537
 A:Molecule type: DNA
 A:Residues: 1-114 <SHI>
 A:Note: authors translated the codon GGA for residue 47 as Ala
 R:Kurukawa, T.; Sasada, R.; Iwane, M.; Igarashi, K.
 FEBS Lett. 213, 189-194, 1987
 A:Title: Cloning and expression of cDNA encoding human basic fibroblast growth factor
 A:Reference number: A26642; MUID:87162468
 A:Accession: A26642
 A:Molecule type: mRNA
 A:Residues: 56-210 <KUR>
 A:Cross-references: GB:M27968; NID:G182562; PIDN:AAA52448.1; PID:G182563
 R:Abraham, J.A.; Whang, J.L.; Timolo, A.; Megia, A.; Fiddes, J.C.
 Cold Spring Harb. Symp. Quant. Biol. 51, 657-668, 1986
 A:Title: Human basic fibroblast growth factor: nucleotide sequence, genomic organization
 A:Reference number: A0924; MUID:87217066
 A:Accession: B32878

A:Molecule type: mRNA
 A:Residues: 56-210 <ABR>
 A:Note: the authors translated the codon GAA for residue 108 as Gly
 R:Abraham, J.A.; Whang, J.L.; Tumolo, A.; Mergia, A.; Friedman, J.; Gospodarowicz, D.; F
 EMO J. 5, 2523-2528, 1986
 A:Title: Human basic fibroblast growth factor: nucleotide sequence and genomic organization
 A:Reference number: S00297; MUID:87053817
 A:Accession: S00297
 A:Molecule type: DNA
 A:Status: not compared with conceptual translation
 A:Residues: 1-155 <AB2>
 A:Note: the authors translated the codon GAA for residue 108 as Gly
 R:Shimoyama, Y.; Golch, M.; Ino, Y.; Sakamoto, M.; Kato, K.; Hirohashi, S.
 Jpn. J. Cancer Res. 82, 1263-1270, 1991
 A:Title: Characterization of high-molecular-mass forms of basic fibroblast growth factor
 rchogenesis.
 A:Reference number: A54316; MUID:92091228
 A:Accession: A54316
 A:Molecule type: protein
 A:Residues: 'XX', 86-88, 'X', 90-91, 'X', 93-95 <SH3>
 A:Note: sequence extracted from NCBI backbone (NCBIP:71595)
 A:Accession: B54316
 A:Molecule type: protein
 A:Residues: 'XXX', 19, 'X', 21-29 <SH2>
 A:Note: sequence extracted from NCBI backbone (NCBIP:71594)
 R:Feige, J.J.; Bradley, J.D.; Fryburg, K.; Farris, J.; Cousens, L.C.; Barr, P.J.; Baird,
 J. Cell Biol. 109, 3105-3114, 1989
 A:Title: Differential effects of heparin, fibronectin, and laminin on the phosphorylation
 A:Reference number: A33624; MUID:90078343
 A:Accession: A33624
 A:Status: preliminary
 A:Molecule type: protein
 A:Residues: 57-210 <FEI>
 R:Story, M.T.; Esch, F.; Shimasaki, S.; Sasse, J.; Jacobs, S.C.; Lawson, R.K.
 Biochem. Biophys. Res. Commun. 142, 702-709, 1987
 A:Title: Amino-terminal sequence of a large form of basic fibroblast growth factor iso
 A:Reference number: A25824; MUID:87156686
 A:Accession: A25824
 A:Molecule type: protein
 A:Residues: 57-77 <STO>
 A:Experimental source: prostate
 R:Gimenez-Gallego, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.
 Biochem. Biophys. Res. Commun. 135, 541-548, 1986
 A:Title: Human brain-derived acidic and basic fibroblast growth factors: amino terminal
 A:Reference number: A90122; MUID:86186784
 A:Accession: B24243
 A:Molecule type: protein
 A:Residues: 65-102, 'X', 104-105 <GIM>
 A:Experimental source: brain
 R:Gautschi, P.; Frazer-Schroder, M.; Bohlen, P.
 FEBS Lett. 204, 203-207, 1986
 A:Title: Partial molecular characterization of endothelial cell mitogens from human brai
 A:Reference number: A91364; MUID:86275260
 A:Accession: B24301
 A:Molecule type: protein
 A:Residues: 65-88, 'X', 90-98, 'X', 100 <GAD>
 R:Sommer, A.; Brewer, M.T.; Thompson, R.C.; Moscatelli, D.; Presta, M.; Rifkin, D.B.
 Biochem. Biophys. Res. Commun. 144, 543-550, 1987
 A:Title: A form of human basic fibroblast growth factor with an extended amino terminus.
 A:Reference number: S42242; MUID:87271238
 A:Accession: S42242
 A:Status: preliminary
 A:Molecule type: mRNA
 A:Residues: 54-210 <SOM>
 A:Cross-references: EMBL:M17599; NID:9183086; PIDN:AAA52534.1; PID:9183087
 R:Patoliano, M.W.; Horlick, R.A.; Spinger, B.A.; Van Dyk, D.E.; Tobey, T.; Wetmore, D
 Biochem. Biophys. Res. Commun. 144, 543-550, 1987
 A:Title: Multivalent ligand-receptor binding interactions in the fibroblast growth facto
 A:Reference number: A55784; MUID:94347757
 A:Accession: B55784
 A:Molecule type: protein
 A:Residues: 54-71 <PAN>

R:Watson, R.; Anthony, F.; Pickett, M.; Lambden, P.; Masson, G.M.; Thomas, E.J.
 Biochem. Biophys. Res. Commun. 187, 1227-1231, 1992
 A:Title: Reverse transcription with nested polymerase chain reaction shows expression
 tients.
 A:Reference number: I52267; MUID:93038590
 A:Accession: I52267
 A:Status: preliminary; translated from GB/EMBL/DBJ
 A:Molecule type: mRNA
 A:Residues: 95-182 <RES>
 A:Cross-references: GB:S47380; NID:9256535; PIDN:AA013853.1; PID:94261553
 A:Experimental source: granulosa cells
 R:Patry, V.; Bugler, B.; Amarlic, F.; Prome, J.C.; Prats, H.
 FEBS Lett. 349, 23-28, 1994
 A:Title: Purification and characterization of the 210-amino acid recombinant basic fl
 A:Reference number: S46253; MUID:94320639
 A:Accession: S46253
 A:Molecule type: protein
 A:Residues: 39-53; 65-88 <PAT>
 A:Note: recombinant gene expressed in Escherichia coli
 C:Genetics:
 A:Gene: GDB:FGF2; FGFR
 A:Cross-references: GDB:119910; OMIM:134920
 A:Map position: 4q25-4q27
 A:Start codon: CAG
 C:Superfamily: fibroblast growth factor
 C:Keywords: alternative initiators; angiogenesis; growth factor; heparin binding; mlt
 F:1-210/Product: basic fibroblast growth factor, 22.5k form #status predicted <MA2>
 F:65-210/Product: basic fibroblast growth factor, 18k form #status predicted <MA2>
 F:87-86/Region: heparin binding #status predicted
 F:171-174/Region: heparin binding #status predicted

Query Match 98.6%; Score 776; DB 2; Length 210;
 Best Local Similarity 98.6%; Pred. No. 6e-70;
 Matches 144; Conservative 1; Mismatches 1; Indels 0; Gaps 0;
 Oy 1 PALPDGSSGAFPPGHFDPKRLYCKNGFFLRHPDGRVDGVRKSDPHIKLQAEER 60
 Db |||||||
 65 PALPDGSSGAFPPGHFDPKRLYCKNGFFLRHPDGRVDGVRKSDPHIKLQAEER 124
 Oy |||||||
 125 GVSITKGVCANRYLAMKEDGRLLASKCVTDECFERLESNNYNYRSRKYSSWVALKR 184
 Db |||||||
 121 TGOYKLGPTKPGCKAILFLPMASAKS 146
 Oy |||||||
 185 TGOYKLGSKTGPCKAILFLPMASAKS 210
 Db |||||||
 RESULT 4
 A31674
 basic fibroblast growth factor precursor - rat
 N:Alternate names: bFGF
 C:Species: Rattus norvegicus (Norway rat)
 C:Date: 21-May-1990 #sequence_revision 21-May-1990 #text_change 16-Jul-1999
 C:Accession: A31674; S00876; S24309
 R:Shimasaki, S.; Emoto, N.; Koba, A.; Mercado, M.; Shibata, F.; Cooksey, K.; Baird, A
 Biochem. Biophys. Res. Commun. 157, 256-263, 1988
 A:Title: Complementary DNA cloning and sequencing of rat ovarian basic fibroblast gro
 A:Reference number: A31674; MUID:86061721
 A:Accession: A31674
 A:Molecule type: mRNA
 A:Residues: 1-154 <SH1>
 A:Cross-references: GB:M22427; NID:9204285; PIDN:AAA41210.1; PID:9204286
 R:Kunikawa, T.; Seno, M.; Igarashi, K.
 Nucleic Acids Res. 16, 5201, 1988
 A:Title: Nucleotide sequence of rat basic fibroblast growth factor cDNA.
 A:Reference number: S00876; MUID:88262516
 A:Accession: S00876
 A:Molecule type: mRNA
 A:Residues: 1-154 <KUP>
 A:Cross-references: EMBL:X07285; NID:956203; PIDN:CAA30265.1; PID:956204
 R:El-Husseini, A.E.D.; Paterson, J.A.; Myal, Y.; Shiu, R.P.C.

RESULT 12

A33665
acidic fibroblast growth factor I precursor [validated] - human

N:Alternate names: beta-BCGF; endothelial cell growth factor beta; heparin-binding growth factor

C:Species: Homo sapiens (man)

C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text-change 08-Dec-2000

C:Accession: A33665; A32316; S18217; A43804; A24662; JH0707; S35535; S35536; T39413; A23166; M8761; A.; Fischer, E.; Graves, D.; Tumolo, A.; Miller, J.; Gospodarowicz, D.; Abrahamson, B.; Res. Commun. 164, 1121-1129, 1989

A:Title: Structural analysis of the gene for human acidic fibroblast growth factor.

A:Reference number: A33665; MUID:90073637

A:Accession: A33665

A:Molecule type: DNA

A:Residues: 1-155 <MER>

A:Cross-references: GB:M30491

R:Wang, W.P.; Lehtoma, K.; Varban, M.L.; Krishnan, I.; Chiu, I.M.
Mol. Cell. Biol. 9, 2387-2395, 1989

A:Title: Cloning of the gene coding for human class I heparin-binding growth factor and

A:Reference number: A32316; MUID:89343957

A:Accession: A32316

A:Molecule type: DNA

A:Residues: 1-155 <MAN>

A:Cross-references: NM:M23087; NID:g183875; PIDN:AAA52638.1; PID:g386768

R:Wang, W.P.; Quick, D.; Balcerzak, S.P.; Needleman, S.W.; Chiu, I.M.

Oncogene 6, 1521-1529, 1991

A:Title: Cloning and sequence analysis of the human acidic fibroblast growth factor gene

A:Reference number: S18217; MUID:92019819

A:Accession: S18217

A:Molecule type: DNA

A:Residues: 1-155 <MA>

A:Cross-references: EMBL:M23086

R:Chiu, I.M.; Wang, W.P.; Lehtoma, K.

Oncogene 5, 755-762, 1990

A:Title: Alternative splicing generates two forms of mRNA coding for human heparin-binding growth factor

A:Reference number: A43804; MUID:90265618

A:Accession: A43804

A:Molecule type: mRNA

A:Residues: 1-155 <CH>

A:Cross-references: EMBL:X51943; NID:g32435; PIDN:CAA36206.1; PID:g32436

R:Jaye, M.; Hawk, R.; Burguess, W.; Ricca, G.A.; Chiu, I.M.; Ravera, M.W.; O'Brien, S.J.; Turck, C.W.

Science 233, 541-545, 1986

A:Title: Human endothelial cell growth factor: cloning, nucleotide sequence, and chromosome localization

A:Reference number: A24662; MUID:86261805

A:Accession: A24662

A:Molecule type: mRNA

A:Residues: 1-155 <JAY>

A:Cross-references: GB:M13361; NID:g181941; PIDN:AAA79245.1; PID:g181942

J. Exp. Med. 175, 1073-1080, 1992

A:Title: An acidic fibroblast growth factor protein generated by alternate splicing acts as a mitogen

A:Reference number: JH0707; MUID:92202857

A:Accession: JH0707

A:Molecule type: mRNA

A:Residues: 1-155 <YU>

A:Cross-references: GB:X65778; NID:g396163; PIDN:CAA46661.1; PID:g396164

R:Payson, R.A.; Canatani, H.; Chotani, M.A.; Wang, W.P.; Harris, S.E.; Myers, R.L.; Chiu, I.M.

Nucleic Acids Res. 21, 489-495, 1993

A:Title: Cloning of two novel forms of human acidic fibroblast growth factor (afGF) mRNA

A:Reference number: S35535; MUID:93181239

A:Accession: S35535

A>Status: translation not shown

A:Molecule type: mRNA

A:Residues: 1-58 <PAY>

A:Cross-references: GB:L01485

A:Accession: S35536

A>Status: translation not shown

A:Molecule type: mRNA

A:Residues: 1-58 <PA>

A:Cross-references: GB:L01487

R:Crumley, G.; Dionne, C.A.; Jaye, M.

Biochem. Biophys. Res. Commun. 171, 7-13, 1990

	A>Title:	The gene for human acidic fibroblast growth factor encodes two upstream exons
	A:Reference number:	I39412; MUID:90365758
	A:Accession:	I39413
	A>Status:	translation not shown
	A:Molecule type:	mRNA
	A:Residues:	1-40 <RES>
	A:Cross-references:	GB:M60515; NID:g178226; PID:AAA51672.1; PID:g553170; GB:M60516;
	A:Cross-references:	GB:M60515; NID:g178226; PID:AAA51672.1; PID:g553170; GB:M60516;
	A:Biochemistry:	25, 4097-4103, 1986
	A:Reference number:	A23553; MUID:86296647
	A:Accession:	A23553
	A:Molecule type:	protein
	A:Residues:	16-155 <HAR>
	R:Gimenez-galleo, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.	
	Biochem. Biophys. Res. Commun.	138, 611-617, 1986
	A>Title:	The complete amino acid sequence of human brain-derived acidic fibroblast gr
	A:Reference number:	A24820; MUID:86295741
	A:Accession:	A24820
	A:Molecule type:	protein
	A:Residues:	16-155 <GIM>
	R:Gimenez-galleo, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.	
	Biochem. Biophys. Res. Commun.	135, 541-548, 1986
	A>Title:	Human brain-derived acidic and basic fibroblast growth factors: amino termin
	A:Reference number:	A90122; MUID:86186784
	A:Accession:	A24243
	A:Molecule type:	protein
	A:Residues:	16-47 <GIT>
	A:Experimental source:	brain
	R:Gauteschl, P.; Frazer-Schroder, M.; Bohlen, P.	
	FEBS Lett.	204, 203-207, 1986
	A>Title:	Partial molecular characterization of endothelial cell mitogens from human b
	A:Reference number:	A91364; MUID:86275260
	A:Accession:	A24301
	A:Molecule type:	protein
	A:Residues:	16-30, 'X', 32-49 <GAN>
	R:Gauteschl-Sova, P.; Muller, T.; Bohlen, P.	
	Biochem. Biophys. Res. Commun.	140, 874-880, 1986
	A>Title:	Amino acid sequence of human acidic fibroblast growth factor.
	A:Reference number:	A26386; MUID:87048871
	A:Accession:	A26386
	A:Molecule type:	protein
	A:Residues:	16-155 <GAZ>
	A:Experimental source:	brain
	R:Chavan, A.J.; Haley, B.E.; Volkin, D.B.; Marfia, K.E.; Verticelli, A.M.; Bruner, M	
	Biochemistry	33, 7193-7202, 1994
	A>Title:	Interaction of nucleotides with acidic fibroblast growth factor (FGF-1).
	A:Reference number:	A53639; MUID:94271773
	A:Accession:	A53639
	A:Molecule type:	protein
	A:Residues:	16-30, 'X', 32-38; 73-75, 'X', 77-97, 'X', 99-101, 128-131, 'X', 133-140, 'X', 142-1
	C:Genetics:	
	A:Gene:	GDB:FGFI; FGFA
	A:Cross-references:	GDB:119909; OMIM:131220
	A:Map position:	5q31.3-5q33.2
	A:Introns:	57/1; 91/3
	C:Superfamily:	fibroblast growth factor
	C:Keywords:	alternative splicing; growth factor; heparin binding
	E:16-155/Product:	fibroblast growth factor 1 #status experimental
	F:129/Binding site:	carbohydrate (Asn) (covalent) #status absent
	Query Match	50.2%; Score 395; DB 1; Length 155;
	Best Local Similarity	56.6%; Pred. No. 4.3e-32;
	Matches	77; Conservative 17; Mismatches 40; Indels 2; Gaps 1;
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Db	19	PQGNWKRKLPLVCSNGGAFRLIPGVTDGTDRSDQHQLDLASVSGEVITKSTENGQ 78
QY	73	VYAMEDGGILASKCVCTDECFEFERLESNNYTYSRKTS--SWYVALKRTGOYLGPRT 130
Db	79	YIAMDTDGILYSSQTPNECCFLERLEENHYMTYISKRKAENNWVGKLKNNSCRGRPRT 138

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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:36:29 ; Search time 23.13 Seconds

(without alignments)
244.404 Million cell updates/sec

Title: US-09-802-365-2

Perfect score: 787
Sequence: 1 PALPEDGSGGAPPPGHFKDP.....GPKTGPQKAILFLPMSAKS 146

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 105224 seqs, 38719550 residues

Total number of hits satisfying chosen parameters: 105224

Minimum DB seq length: 0

Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : Swissprot_40:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	787	100.0	155	1	FGF2_BOVIN
2	781	99.2	155	1	FGF2_SHEEP
3	776	98.6	155	1	FGF2_HUMAN
4	759.5	96.5	154	1	FGF2_RAT
5	754.5	95.9	154	1	FGF2_MOUSE
6	736	93.5	137	1	FGF2_RABIT
7	734	93.3	158	1	FGF2_CHICK
8	717.5	91.2	156	1	FGF2_MONDO
9	644	81.8	155	1	FGF2_XENLA
10	405	51.5	155	1	FGF1_MESAU
11	395	50.2	155	1	FGF1_HUMAN
12	392.5	49.9	155	1	FGF1_CHICK
13	391	49.7	155	1	FGF1_MOUSE
14	389	49.4	152	1	FGF1_PIG
15	384	48.8	155	1	FGF1_BOVIN
16	352	42.0	194	1	FGF4_CHICK
17	251.5	32.0	256	1	FGF5_MOUSE
18	249.5	31.7	264	1	FGF5_MOUSE
19	248.5	31.7	266	1	FGF5_RAT
20	246	31.3	220	1	FGF3_CHICK
21	245.5	31.2	206	1	FGF4_HUMAN
22	245	31.1	208	1	FGF6_HUMAN
23	245	31.1	208	1	FGF6_MOUSE
24	243.5	30.9	206	1	FGF4_BOVIN
25	241	30.6	268	1	FGF5_HUMAN
26	236	30.0	187	1	FGF4_XENLA
27	235.5	29.9	237	1	FGF3_XENLA
28	235	29.9	245	1	FGF3_MOUSE
29	234	29.7	239	1	FGF3_HUMAN
30	232.5	29.5	202	1	FGF4_MOUSE
31	231.5	29.4	192	1	FGF4_XENLA
32	215	27.3	208	1	FGF9_HUMAN
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38	205.5	26.1	194	1	FGF7_CANFA	P79150	canis fami
39	205.5	26.1	207	1	FGF7_HUMAN	O43320	homo sapien
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41	203	25.8	208	1	FGF4_HUMAN	O15520	homo sapien
42	203	25.8	215	1	FGF4_RAT	P70492	rattus norv
43	202.5	25.7	194	1	FGF7_HUMAN	P21781	homo sapien
44	202.5	25.7	194	1	FGF7_SHEEP	P48808	ovis aries
45	200	25.4	209	1	FGF4_MOUSE	O35365	mus musculu

ALIGNMENTS

```

RESULT 1
ID FGF2_BOVIN STANDARD: PRT: 155 AA.
AC P03969:
DT 23-OCT-1986 (Rel. 02, Last sequence update)
DT 23-OCT-1986 (Rel. 02, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (BFGF) (Prostatropin) [Contains: Kidney-derived growth
DE factor].
CN FGF2 OR FGF-2.
OS Bos taurus (Bovine).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
OC Bovidae; Bovinae; Bos.
OX NCBI_TaxID=9913;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=86261806; PubMed=2425435;
RA Abraham J.A., Mergia A., Whang J.L., Tumolo A., Friedman J.,
RA Hjertild K.A., Gospodarowicz D., Fiddes J.C.;
RT "Nucleotide sequence of a bovine clone encoding the angiogenic
RT protein, basic fibroblast growth factor.";
RL Science 233:545-548(1986).
RN [2]
RP SEQUENCE FROM N.A.
RX MEDLINE=87217066; PubMed=3472745;
RA Abraham J.A., Whang J.L., Tumolo A., Mergia A., Fiddes J.C.;
RT "Human basic fibroblast growth factor: nucleotide sequence, genomic
RT organization, and expression in mammalian cells.";
RL Cold Spring Harb. Symp. Quant. Biol. 51:657-668(1986).
RN [3]
RP SEQUENCE OF 10-155.
RX MEDLINE=86016731; PubMed=3863109;
RA Esch F., Baird A., Ling N., Ueno N., Hill F., Denroy L., Klepper R.,
RA Gospodarowicz D., Boehlen P., Guillemin R.;
RT "Primary structure of bovine pituitary basic fibroblast growth factor
RT (FGF) and comparison with the amino-terminal sequence of bovine brain
RT acidic FGF.";
RL Proc. Natl. Acad. Sci. U.S.A. 82:6507-6511(1985).
RN [4]
RP SEQUENCE OF 1-9.
RX MEDLINE=86295737; PubMed=3741423;
RA Ueno N., Baird A., Esch F., Ling N., Guillemin R.;
RT "Isolation of an amino terminal extended form of basic fibroblast
RT growth factor.";
RL Biochem. Biophys. Res. Commun. 138:580-588(1986).
RN [5]
RP SEQUENCE OF 25-41.
RX TISSUE=Kidney;
RT MEDLINE=86095426; PubMed=4081126;
RA Baird A., Esch F., Boehlen P., Ling N., Gospodarowicz D.;
RT "Isolation and partial characterization of an endothelial cell growth
RT factor from the bovine kidney: homology with basic fibroblast growth
RT factor.";
RL Regul. Pept. 12:201-213(1985).

```

RN [6]
 RP SEQUENCE OF 21-40.
 RC TISSUE-Kidney;
 RX MEDLINE=87119165; PubMed=3809608;
 RA Ueno N., Baird A., Esch F., Shimasaki S., Ling N., Gullermin R.;
 RT "Purification and partial characterization of a mitogenic factor from
 RT bovine liver: structural homology with basic fibroblast growth
 RT factor";
 RL Regul. Pept. 16:135-145(1986).
 RN [7]
 RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).
 RX MEDLINE=91095983; PubMed=1702556;
 RA Zhu X., Komiyama H., Chirino A., Faham S., Fox G.M., Arakawa T.,
 RA Hsu B.T., Rees D.C.;
 RT "Three-dimensional structures of acidic and basic fibroblast growth
 RT factors";
 RL Science 251:90-93(1991).
 CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VITRO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -1- SUBUNIT: MONOMER.
 CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
 CC AFGF.
 CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC -----
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 CC -----
 DR EMBL: M13440; AAA30518.1; -
 DR PIR: A24663; GK80B.
 DR PIR: A24819; A24819.
 DR PIR: A32878; A32878.
 DR PDB: 1BAS; 31-OCT-93.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; ILL_HBGF.
 DR Pfam: PF00167; FGF_1.
 DR PRINTS: PR00262; ILL_HBGF.
 DR ProDom: PD000831; HBGF_FGF_1.
 DR SMART: SM00442; FGF_1.
 DR PROSITE: PS00247; HBGF_FGF_1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
 KW 3D-structure.
 FT PROBE 1 9
 FT CHAIN 10 155 HEPARIN-BINDING GROWTH FACTOR 2.
 FT SITE 25 155 KIDNEY-DERIVED GROWTH FACTOR.
 FT SITE 46 48 CELL ATTACHMENT SITE (POTENTIAL).
 FT BINDING 88 90 CELL ATTACHMENT SITE (POTENTIAL).
 FT BINDING 27 31 HEPARIN (POTENTIAL).
 FT BINDING 116 119 HEPARIN (POTENTIAL).
 FT STRAND 30 34
 FT STRAND 35 38
 FT TURN 39 43
 FT STRAND 43 46
 FT TURN 45 46
 FT STRAND 49 52
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 RESULT 2
 FEFF2_SHEEP
 ID FGF2_SHEEP STANDARD: PRT; 155 AA.
 AC P20003.
 DT 01-FEB-1991 (Rel. 17, Created)
 DT 01-FEB-1996 (Rel. 33, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
 DE growth factor) (BFGF) (Prostatropin).
 GN FGF2 OR FGF-2.
 OS Ovis aries (Sheep).
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
 OC Bovidae; Caprinae; Ovis.
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 RN [1]
 RP SEQUENCE FROM N.A.
 RA Sutton R., Ward W.G., Raphael K.A., Cam G.R.;
 RL Submitted (SEP-1994) to the EMBL/GenBank/DBJ databases.
 [2]
 RP SEQUENCE OF 9-155.
 RX MEDLINE=88055577; PubMed=3678486;
 RA Simpson R.J., Moritz R.L., Lloyd C.J., Fabri L.J., Nice E.C.,
 RA Rudira M.R., Burgess A.W.;
 RT "Primary structure of ovine pituitary basic fibroblast growth
 RT factor";
 RL FEBS Lett. 224:128-132(1987).
 CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VITRO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -1- SUBUNIT: MONOMER.
 CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
 CC AFGF.
 CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC -----
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DR EMBL: L36136; AAA31519.1; -
DR PIR: S00185; S00185.
DR HSSP: P09038; 1BPF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF; 1.
DR PRINTS: PR00262; IL1HBGF.
DR Prodom: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9
FT CHAIN 10 155 HEPARIN-BINDING GROWTH FACTOR 2.
FT SITE 45 48 CELL ATTACHMENT SITE (POTENTIAL).
FT SITE 87 90 CELL ATTACHMENT SITE (POTENTIAL).
FT BINDING 27 31 HEPARIN (POTENTIAL).
FT BINDING 116 119 HEPARIN (POTENTIAL).
SQ SEQUENCE 155 AA; 17280 MW; B5F2364BA610606D CRC64;

Query Match 99.2%; Score 781; DB 1; Length 155;
Best Local Similarity 99.3%; Pred. No. 3,1e-74;
Matches 145; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

OY 1 PALPDDGSGGAPPGHFHFKDKRLKCKNGGFELRIHPDGRVDSREKSDPHIKLOQAEER 60
DB 10 PALPDDGSGSAPPPGHFHKDKRLKCKNGGFELRIHPDGRVDSREKSDPHIKLOQAEER 69
OY 61 GVSATKGCANRYLAMKEDGRLASKCVTDECFEERLESNNYRKRKYSWYALKR 120
DB 70 GVSATKGCANRYLAMKEDGRLASKCVTDECFEERLESNNYRKRKYSWYALKR 129
OY 121 TGOYKLGPTGPGOKAILEFLPMAS 145
DB 130 TGOYKLGPTGPGOKAILEFLPMAS 155

RESULT 3
FGF2_HUMAN STANDARD: PRT; 155 AA.

AC 01-NOV-1988 (Rel. 09, Created)
DT 01-NOV-1988 (Rel. 09, Last sequence update)
DF 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (basic fibroblast growth factor) (BGF) (Prostatropin).
GN FGF2 OR FGF.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OC NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=87053817; PubMed=3780670;
RA Abraham J.A., Whang J.L., Tumolo A., Mergia A., Friedman J., Gospodarowicz D., Fiddes J.C.;
RT "Human basic fibroblast growth factor: nucleotide sequence and genomic organization.";
RL EMBO J. 5:2523-2528(1986).
RN [2]
RP SEQUENCE FROM N.A.
RX MEDLINE=87217066; PubMed=3472745;
RA Abraham J.A., Whang J.L., Tumolo A., Mergia A., Fiddes J.C.;
RT "Human basic fibroblast growth factor: nucleotide sequence, genomic organization, and expression in mammalian cells.";
RL Cold Spring Harb. Symp. Quant. Biol. 51:657-688(1986).
RN [3]
RP SEQUENCE FROM N.A.
RX MEDLINE=87213338; PubMed=3579930;
RA Sommer A., Brewer M.T., Thompson R.C., Moscattelli D., Presta M., Rifkin D.B.,
RT "A form of human basic fibroblast growth factor with an extended amino terminus.";

RT

RL Biochem. Biophys. Res. Commun. 144:543-550(1987).
RN [4]
RP SEQUENCE FROM N.A.
RX MEDLINE=87162468; PubMed=2435575;
RA Kurokawa T., Sasada K., Iwane M., Igarashi K.;
RT "Cloning and expression of cDNA encoding human basic fibroblast growth factor.";
RL FEBS Lett. 213:189-194(1987).
RN [5]
RP SEQUENCE FROM N.A.
RX MEDLINE=89184522; PubMed=2538817;
RA Prats H., Kagnad M., Prats A.C., Klagsbrun M., Lelias J.M., Liauzun P., Chalou P., Tauber J.P., Amalric F., Smith J.A., Caput D.;
RT "High molecular mass forms of basic fibroblast growth factor are initiated by alternative CUG codons.";
RL Proc. Natl. Acad. Sci. U.S.A. 86:1836-1840(1989).
RN [6]
RP SEQUENCE OF 10-35.
RX MEDLINE=86275260; PubMed=3732516;
RA Gauschi P., Prater-Schroeder M., Boehlen P.;
RT "Partial molecular characterization of endothelial cell mitogens from human brain: acidic and basic fibroblast growth factors.";
RL FEBS Lett. 204:203-207(1986).
RN [7]
RP SEQUENCE OF 10-39.
RX MEDLINE=86186784; PubMed=3964259;
RA Gimenez-Gallego G., Conn G., Hatcher V.B., Thomas K.A.;
RT "Human brain-derived acidic and basic fibroblast growth factors: amino terminal sequences and specific mitogenic activities.";
RL Biochem. Biophys. Res. Commun. 135:541-548(1986).
RN [8]
RP SEQUENCE OF 2-22.
RX MEDLINE=87156686; PubMed=2435284;
RA Story M.T., Esch F., Shimazaki S., Sasse J., Jacobs S.C., Lawson R.K.;
RT "Amino-terminal sequence of a large form of basic fibroblast growth factor isolated from human benign prostatic hyperplastic tissue.";
RL Biochem. Biophys. Res. Commun. 142:702-709(1987).
RN [9]
RP X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS).
RX MEDLINE=91195367; PubMed=1707542;
RA Eriksson A.E., Cousens L.S., Weaver L.H., Matthews B.W.;
RT "Three-dimensional structure of human basic fibroblast growth factor.";
RL Proc. Natl. Acad. Sci. U.S.A. 88:3441-3445(1991).
RN [10]
RP X-RAY CRYSTALLOGRAPHY (1.6 ANGSTROMS).
RX MEDLINE=94004464; PubMed=7691311;
RA Eriksson A.E., Cousens L.S., Matthews B.W.;
RT "Refinement of the structure of human basic fibroblast growth factor at 1.6-A resolution and analysis of presumed heparin binding sites by selenate substitution.";
RL Protein Sci. 2:1274-1284(1993).
RN [11]
RP X-RAY CRYSTALLOGRAPHY (1.8 ANGSTROMS).
RX MEDLINE=91195368; PubMed=1849658;
RA Zhang J., Cousens L.S., Barr P.J., Sprang S.R.;
RT "Three-dimensional structure of human basic fibroblast growth factor, a structural homolog of interleukin 1 beta.";
RL Proc. Natl. Acad. Sci. U.S.A. 88:3446-3451(1991).
RN [12]
RP X-RAY CRYSTALLOGRAPHY (1.6 ANGSTROMS).
RX MEDLINE=92121151; PubMed=1769963;
RA Ago H., Kitagawa Y., Fujishima A., Matsuura Y., Katsube Y.;
RT "Crystal structure of basic fibroblast growth factor at 1.6-A resolution.";
RL J. Biochem. 110:360-363(1991).
RN [13]
RP X-RAY CRYSTALLOGRAPHY (2.8 ANGSTROMS).
RX MEDLINE=91095983; PubMed=1702556;
RA Zhu X., Komiya H., Chirino A., Faham S., Fox G.M., Arakawa T., Hsu B.T., Rees D.C.;
RT "Three-dimensional structures of acidic and basic fibroblast growth

factors.";
 RL Science 251:90-93(1991).
 [14]
 RP STRUCTURE BY NMR.
 RX MEDLINE-97040521; PubMed-8885834;
 RA Moy F.J., Seadon A.P., Boehlen P., Powers R.;
 RT "High-resolution solution structure of basic fibroblast growth factor
 determined by multidimensional heteronuclear magnetic resonance
 spectroscopy.";
 RL Biochemistry 35:13552-13561(1996).
 CC -! FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -! SUBUNIT: MONOMER.
 CC -! MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
 CC AFGF.
 CC -! SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC -----
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 DR EMBL; M17599; AAA52534.1; ALT_INIT.
 DR EMBL; X04431; CAA28027.1; -;
 DR EMBL; X04432; CAA28028.1; -;
 DR EMBL; X04433; CAA28029.1; -;
 DR EMBL; M27968; AAA52448.1; -;
 DR EMBL; J04513; AAA52533.1; ALT_INIT.
 DR PIR; A25824; A25824.
 DR PIR; A26642; A26642.
 DR PIR; B24243; B24243.
 DR PIR; B24301; B24301.
 DR PIR; B32878; B32878.
 DR PIR; S00297; S00297.
 DR PDB; 2FGF; 15-APR-92.
 DR PDB; 4FGF; 15-JUL-93.
 DR PDB; 1FGA; 15-JUL-93.
 DR PDB; 1BEB; 03-APR-96.
 DR PDB; 1BFC; 03-APR-96.
 DR PDB; 1BFG; 16-JUN-97.
 DR PDB; 1BFG; 31-JAN-94.
 DR PDB; 2BPH; 30-APR-94.
 DR PDB; 1BLA; 08-NOV-96.
 DR PDB; 1BD; 08-NOV-96.
 DR MIM; 134920; -;
 DR InterPro; IPR002209; HBGF_FGF.
 DR InterPro; IPR002348; IL1_HBGF.
 DR Pfam; PF00167; FGF_1.
 DR PRINTS; PR00262; IL1HBGF.
 DR PRODOM; PD000831; HBGF_FGF_1.
 DR SMART; SM00442; FGF_1.
 DR PROSITE; PS00247; HBGF_FGF_1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
 KW 3D-structure.
 FT PROPEP 1 9
 FT CHAIN 10 155
 FT SITE 46 48
 FT SITE 88 90
 FT BINDING 27 31
 FT BINDING 116 119
 FT STRAND 30 34
 FT STRAND 35 38
 FT STRAND 39 43
 FT STRAND 39 43
 FT TURN 45 46
 FT TURN 49 52
 FT TURN 55 56
 FT HELIX 58 60
 FT STRAND 62 66
 HEPARIN-BINDING GROWTH FACTOR 2.
 CELL ATTACHMENT SITE (POTENTIAL).
 HEPARIN (POTENTIAL).
 HEPARIN (POTENTIAL).

FT TURN 69 70
 FT STRAND 71 76
 FT TURN 77 80
 FT STRAND 81 85
 FT TURN 87 88
 FT STRAND 91 94
 FT HELIX 99 101
 FT STRAND 103 107
 FT TURN 109 110
 FT STRAND 113 117
 FT TURN 121 122
 FT STRAND 124 124
 FT STRAND 127 127
 FT TURN 129 130
 FT STRAND 132 133
 FT STRAND 136 138
 FT HELIX 141 142
 FT TURN 144 146
 FT STRAND 148 152
 SQ SEQUENCE 155 AA; 17254 MW; BE6CE1373007129 CRC64;
 Query Match 98.6%; Score 776; DB 1; Length 155;
 Best Local Similarity 98.6%; Pred. No. 1e-73;
 Matches 144; Conservative 1; Mismatches 1; Indels 0; Gaps 0;
 QY 1 PALPDGSGGAPPPGHPDKRLYCKNGGFFLRHPDGRVDSVREKSPDHKIQLAEEER 60
 DB 10 PALPDGSGGAPPPGHPDKRLYCKNGGFFLRHPDGRVDSVREKSPDHKIQLAEEER 69
 QY 61 GVSISIKGVCANRYLAMKEDGRLASKCVTDECFPERLESNNYNTYRSKRYSSWYVALKR 120
 DB 70 GVSISIKGVCANRYLAMKEDGRLASKCVTDECFPERLESNNYNTYRSKRYSSWYVALKR 129
 QY 121 TGYVKLGPKTGPGQKAILFLPMSANS 146
 DB 130 TGYVKLGSKTGPQKAILFLPMSANS 155
 RESULT 4
 FGF2_RAT STANDARD; PRT; 154 AA.
 ID FGF2_RAT
 AC P13109;
 DT 01-JAN-1990 (Rel. 13; Created)
 DT 01-JAN-1990 (Rel. 13; Last sequence update)
 DT 01-MAR-2002 (Rel. 41; Last annotation update)
 DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
 DE growth factor) (BFGF) (Prostatopin).
 GN FGF2 OR FGF-2.
 OS Rattus norvegicus (Rat).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
 OX NCBI_TaxID=10116;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC STRAIN=SPRAGUE-DAWLEY; TISSUE=Ovary;
 RX MEDLINE-89061721; PubMed-3196337;
 RA Shinasaki S., Emoto N., Koba A., Mercado M., Shibata F.,
 RA Cooksey K., Baird A., Ling N.;
 RT "Complementary DNA cloning and sequencing of rat ovarian basic
 RT fibroblast growth factor and tissue distribution study of its mRNA.";
 RL Biochem. Biophys. Res. Commun. 157:256-263(1988).
 RN [2]
 RP SEQUENCE FROM N.A.
 RC TISSUE=Brain;
 RX MEDLINE-88262516; PubMed-3387229;
 RA Kurokawa T., Seno M., Igarashi K.;
 RT "Nucleotide sequence of rat basic fibroblast growth factor cDNA.";
 RL Nucleic Acids Res. 16:5201-5201(1988).
 RN [3]
 RP SEQUENCE OF 1-28 FROM N.A.
 RC STRAIN=SPRAGUE-DAWLEY; TISSUE=Testis;
 RX MEDLINE-97200905; PubMed-9048734;
 RA Pasumathil K.B.S., Jin Y., Cattini P.A.;

RT "Cloning of the rat fibroblast growth factor-2 promoter region and
RT its response to mitogenic stimuli in glioma C6 cells.";
RL J. Neurochem. 68:898-908(1997).
RN [4]
RP SEQUENCE OF 35-154 FROM N.A.
RC STRAIN-SPRAGUE-DAWLEY; TISSUE=Brain;
RX MEDLINE-92329546; PubMed-1378302;
RA El-Husseini A.E.D., Paterson J.A., Myal Y., Shiu R.P.C.;
RT "PCR detection of the rat brain basic fibroblast growth factor (bFGF)
RT mRNA containing a unique 3' untranslated region.";
RL Biochim. Biophys. Acta 1131:314-316(1992).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- TISSUE SPECIFICITY: FOUND IN ALL THE TISSUES EXAMINED.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC -----
DR EMBL; M22427; AAA41210.1; -
DR EMBL; X07285; CAA30265.1; -
DR EMBL; U78079; AAC3225.1; -
DR EMBL; X61697; CAA43863.1; -
DR PIR; S00876; S00876.
DR PIR; A31674; A31674.
DR HSSP; P09038; 1BPF.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; ILLHBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROBE
FT CHAIN 1 154 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 26 30 HEPARIN (POTENTIAL).
FT BINDING 115 118 HEPARIN (POTENTIAL).
SQ SEQUENCE 154 AA; 17139 MW; 1A0F14FF423D8403 CRC64;

Query Match 96.5%; Score 759.5; DB 1; Length 154;
Best Local Similarity 97.3%; Pred. No. 5.3e-72;
Matches 142; Conservative 2; Mismatches 1; Indels 1; Gaps 1;

QY 1 PALPEDGSGAPPGHFKDKRLRYCKNGGFPLRIHPDGVADVGRKSDPHIKLOLAER 60
DB 10 PALPEDGG-GAEPGHHFKDKRLRYCKNGGFPLRIHPDGVADVGRKSDPHIKLOLAER 68
QY 61 GVSISIGVCANRYLAMKEGRLASKCVDCEFFERLESNNNTYRSKRYSSWYALAKR 120
DB 69 GVSISIGVCANRYLAMKEGRLASKCVDCEFFERLESNNNTYRSKRYSSWYALAKR 128
QY 121 TGOYKLGKPTGPGOKAILFLPMSAKS 146
DB 129 TGOYKLGKPTGPGOKAILFLPMSAKS 154

RESULT 5
FGF2_MOUSE STANDARD; PRT; 154 AA.
ID FGF2_MOUSE
AC P15655;
DT 01-APR-1990 (Rel. 14, Created)

DT 01-APR-1990 (Rel. 14, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (bFGF) (Prostatropin).
GN FGF2 OR FGF-2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE-90201563; PubMed-2318343;
RA Hebert J.M., Basilio C., Goldfarb M., Haub O., Martin G.R.;
RT "Isolation of cdnas encoding four mouse FGF family members and
RT characterization of their expression patterns during embryogenesis.";
RL Dev. Biol. 138:454-463(1990).
RN [2]
RP SEQUENCE FROM N.A.
RC STRAIN=C57BL/6J, A/J, AND NOD/LtJ; TISSUE=Spleen;
RA Ma R.Z., Teuscher C.;
RL Submitted (MAY-1998) to the EMBL/GenBank/DDAJ databases.
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC -----
DR EMBL; M30644; AAA37621.1; -
DR EMBL; AF065903; AAC17503.1; -
DR EMBL; AF065904; AAC17504.1; -
DR EMBL; AF065905; AAC17505.1; -
DR PIR; C37360; C37360.
DR HSSP; P09038; 1BPF.
DR MGD; MGI:95516; Fgf2.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; ILLHBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROBE
FT CHAIN 1 154 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 26 30 HEPARIN (POTENTIAL).
FT BINDING 115 118 HEPARIN (POTENTIAL).
SQ SEQUENCE 154 AA; 17153 MW; 689F67741E274388 CRC64;

Query Match 95.9%; Score 754.5; DB 1; Length 154;
Best Local Similarity 96.6%; Pred. No. 1.8e-71;
Matches 141; Conservative 3; Mismatches 1; Indels 1; Gaps 1;

QY 1 PALPEDGSGAPPGHFKDKRLRYCKNGGFPLRIHPDGVADVGRKSDPHIKLOLAER 60
DB 10 PALPEDGGA-AEPGHHFKDKRLRYCKNGGFPLRIHPDGVADVGRKSDPHIKLOLAER 68
QY 61 GVSISIGVCANRYLAMKEGRLASKCVDCEFFERLESNNNTYRSKRYSSWYALAKR 120
DB 69 GVSISIGVCANRYLAMKEGRLASKCVDCEFFERLESNNNTYRSKRYSSWYALAKR 128
QY 121 TGOYKLGKPTGPGOKAILFLPMSAKS 146

DB 129 TGOYKLGSKTGPQKAILFLPMSAKS 154

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|||||
RESULT 6
ID FGF2_RABIT STANDARD; PRT; 137 AA.
AC P48799;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 (HBGF-2) (Basic fibroblast growth
factor) (BFGF) (Prostacropin) (Fragment).
GN FGF2.
OS Oryctolagus cuniculus (Rabbit).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
OX NCBI_TaxID=9986;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN-NEW ZEALAND WHITE; TISSUE=Smooth muscle;
RX MEDLINE=93343209; PubMed=8342599;
RA Winkles J.A., Friesel R., Alberts G.F., Janat M.F., Liu G.;
RT "Elevated expression of basic fibroblast growth factor in an
RT immortalized rabbit smooth muscle cell line.";
RL Am. J. Pathol. 143:518-527(1993).
CC - FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC - SUBUNIT: MONOMER.
CC - MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC - SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
CC EMBL: L12034; AAA31248.1; -.
CC DR HSSP: P09038; IBEF.
CC DR InterPro: IPR002209; HBGF_FGF.
CC DR Pfam: PF00167; FGF_1.
CC DR ProDom: PD000831; HBGF_FGF_1.
CC DR SMART: SM00442; FGF_1.
CC DR PROSITE: PS00247; HBGF_FGF_1.
CC KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
CC FT BINDING 18 22 HEPARIN (POTENTIAL).
CC FT BINDING 107 110 HEPARIN (POTENTIAL).
CC FT NON_TER 137 137
CC FT SEQUENCE 137 AA; 15418 MW; 0D9E6457B88BEC51 CRC64;
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Query Match 93.5%; Score 736; DB 1; Length 137;
Best Local Similarity 99.3%; Pred. No. 1.3e-69;
Matches 136; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

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QY 1 PALPEDGGGAGPPGPHFKPKRKYCKNGGFFLRINPDGVDGVREKSDPHIKLOLAER 60
DB 1 PALPEDGGGAGPPGPHFKPKRKYCKNGGFFLRINPDGVDGVREKSDPHIKLOLAER 60
QY 61 GVAISIKGVANRYLAMKEDGRLILASCVTDECFEERLESNNYNTYRSKYSWYVALKR 120
DB 61 GVAISIKGVANRYLAMKEDGRLILASCVTDECFEERLESNNYNTYRSKYSWYVALKR 120
QY 121 TGOYKLGPKTGPQKAI 137
DB 121 TGOYKLGSKTGPQKAI 137
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RESULT 7
ID FGF2_CHICK STANDARD; PRT; 158 AA.
AC P48800;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
growth factor) (BFGF).
GN FGF2 OR FGF-2.
OS Gallus gallus (chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OX NCBI_TaxID=9031;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=93246053; PubMed=7683281;
RA Borja A.Z., Zeller R., Meljers C.;
RT "Expression of alternatively spliced bFGF first coding exons and
RT antisense mRNAs during chicken embryogenesis.";
RL Dev. Biol. 157:110-118(1993).
CC - FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC - SUBUNIT: MONOMER.
CC - MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC - SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
CC EMBL: M95707; AAA48617.1; -.
CC DR HSSP: P09038; IBEF.
CC DR InterPro: IPR002348; IL1_HBGF.
CC DR Pfam: PF00167; FGF_1.
CC DR PRINTS: PR00262; IL1HBGF.
CC DR ProDom: PD000831; HBGF_FGF_1.
CC DR SMART: SM00442; FGF_1.
CC DR PROSITE: PS00247; HBGF_FGF_1.
CC KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
CC FT PROPEP 1 12 BY SIMILARITY.
CC FT CHAIN 13 158 HEPARIN-BINDING GROWTH FACTOR 2.
CC FT BINDING 30 34 HEPARIN (POTENTIAL).
CC FT BINDING 119 122 HEPARIN (POTENTIAL).
CC FT SEQUENCE 158 AA; 17374 MW; 7B69B684C17F1816 CRC64;
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Query Match 93.3%; Score 734; DB 1; Length 158;
Best Local Similarity 99.2%; Pred. No. 2.4e-69;
Matches 136; Conservative 4; Mismatches 6; Indels 0; Gaps 0;

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QY 1 PALPEDGGGAGPPGPHFKPKRKYCKNGGFFLRINPDGVDGVREKSDPHIKLOLAER 60
DB 13 PALPEDGGGAGPPGPHFKPKRKYCKNGGFFLRINPDGVDGVREKSDPHIKLOLAER 72
QY 61 GVAISIKGVANRYLAMKEDGRLILASCVTDECFEERLESNNYNTYRSKYSWYVALKR 120
DB 73 GVAISIKGVANRYLAMKEDGRLILASCVTDECFEERLESNNYNTYRSKYSWYVALKR 132
QY 121 TGOYKLGPKTGPQKAI 146
DB 133 TGOYKLGPKTGPQKAI 158
```

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RESULT 8
FGF2_MONDO
ID FGF2_MONDO STANDARD; PRT; 156 AA.
AC PA8798;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (BFGF) (Prostatropin).
GN FGF2
OS Monodelphis domestica (Short-tailed grey opossum).
OC Eukaryota; Metazoa; Chordata; Cranialata; Vertebrata; Euteleostomi;
OC Mammalia; Metatheria; Didelphimorphia; Didelphidae; Monodelphis.
OX NCBI_TaxID=13616;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Bye;
RX MEDLINE=94296558; PubMed=8024698;
RA Kusewitt D.F., Sabourin C.L.K., Sherburn T.E., Ley R.D.;
RT "Characterization of cDNA encoding basic fibroblast growth factor of
RT the marsupial Monodelphis domestica.";
RL DNA Cell Biol. 13:549-554(1994).
CC -!- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -!- SUBUNIT: MONOMER.
CC -!- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -!- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL: Z15154; CAA7854.1; ALT_INIT.
DR HSSP: P09038; 1BF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IL1HBGF.
DR ProDom: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 1
FT CHAIN 10 156 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 28 32 HEPARIN (POTENTIAL).
FT BINDING 117 120 HEPARIN (POTENTIAL).
SQ SEQUENCE 156 AA; 17303 MW; 7E653FCC49BF1209 CRC64;

Query Match 91.2%; Score 717.5; DB 1; Length 156;
Best Local Similarity 92.5%; Pred. No. 1.2e-67;
Matches 136; Conservative 4; Mismatches 6; Indels 1; Gaps 1;
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RESULT 9
FGF2_XENLA
ID FGF2_XENLA STANDARD; PRT; 155 AA.
AC P12226;
DT 01-OCT-1989 (Rel. 12, Created)
DT 01-JAN-1990 (Rel. 13, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (BFGF).
GN FGF2 OR FGF-2.
OS Xenopus laevis (African clawed frog).
OC Eukaryota; Metazoa; Chordata; Cranialata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Anura; Mesobatrachia; Pipidae; Pipidae;
OX NCBI_TaxID=8355;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=89058621; PubMed=3194757;
RA Kimmelman D., Abraham J., Haaparanta T., Palisi T., Kirschner M.;
RT "The presence of fibroblast growth factor in the frog egg: its role
RT as a natural mesoderm inducer.";
RL Science 242:1053-1056(1988).
CC [2]
CC SEQUENCE OF 95-155 FROM N.A.
RX MEDLINE=88052890; PubMed=3479265;
RA Kimmelman D., Kirschner M.;
RT "Synergistic induction of mesoderm by FGF and TGF-beta and the
RT identification of an mRNA coding for FGF in the early Xenopus
RT embryo.";
RL Cell 51:869-877(1987).
CC -!- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL: M18067; AAA49726.1; -.
DR PIR: A29618; A29618.
DR PIR: A40117; A40117.
DR HSSP: P09038; 1BF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IL1HBGF.
DR ProDom: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 1
FT CHAIN 10 155 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 27 31 HEPARIN (POTENTIAL).
FT BINDING 116 119 HEPARIN (POTENTIAL).
FT CONFLICT 111 111 MISSING (IN REF. 2).
SQ SEQUENCE 155 AA; 17241 MW; 036735C8063142BD CRC64;

Query Match 81.8%; Score 644; DB 1; Length 155;
Best Local Similarity 82.9%; Pred. No. 5.4e-60;
Matches 121; Conservative 8; Mismatches 17; Indels 0; Gaps 0;
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OY 121 TGOYKLGPKTGGGKAILFLPMASAKS 146
| | | | |
Db 130 TGOYKNGSSTGPGOKAILFLPMASAKS 155

RESULT 10
ID FGF1_MESAU STANDARD; PRT; 155 AA.
AC P34004;
DT 01-FEB-1994 (Rel. 28, Created)
DT 01-FEB-1994 (Rel. 28, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast growth factor) (AFGF).
GN FGF1 OR FGF-1.
OS Mesocricetus auratus (Golden hamster).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Cricetinae; Mesocricetus.
OX NCBI_Taxid=10036;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=90270291; PubMed=1693366;
RA Hall J.A., Harris M.A., Malark M., Mansson P.E., Zhou H., Harris S.E.;
RT "Characterization of the hamster DDT-1 cell atGF/HBGF-I gene and cDNA and its modulation by steroids."
RL J. Cell. Biochem. 43:17-26(1990).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY THAN DOES HBGF.
CC
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
PIR: A60721; A60721.
DR HSSP: P05230; 1RM.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IIL_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IIL_HBGF.
DR PRODOM: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 15
FT CHAIN 16 155
FT BINDING 24 28 HEPARIN-BINDING GROWTH FACTOR 1.
FT BINDING 113 116 HEPARIN (POTENTIAL).
FT BINDING 155 AA; 17403 MW; 41E5EC760E412CC5 CRC64;
SEQUENCE

Query Match 51.5%; Score 405; DB 1; Length 155;
Best Local Similarity 57.4%; Pred. No. 3.8e-35;
Matches 78; Conservative 17; Mismatches 39; Indels 2; Gaps 1;

OY 13 PPGHKKDKRKYCKNGGFFLRHPGKRDVGEKSDPHKLOLOMEEGVYSIRKVCANR 72
| | | | |
Db 19 PPGNKKRKLKLYCSNGGHLRLPDGTYDGTDRSDOHQLOLSAESAGEVYIKGTETGQ 78
| | | | |

OY 73 YLAMEDGGLASKCVTDECFEERLESNNNTYSRKYS--SMVALKRTGOYKLGPKT 130
| | | | |
Db 79 YLAMPDTGLIYSOTPNNECFLFLEHNYHTYTSKHAENWVGLKKNOSCKRGPR 138
| | | | |

OY 131 GPGOKAILFLPMASAKS 146
| | | | |
Db 139 HYGOKAILFLPLPVSS 154
| | | | |

RESULT 11
ID FGF1_HUMAN STANDARD; PRT; 155 AA.
AC P05230; P07502;

DT 13-AUG-1987 (Rel. 05, Created)
DT 13-AUG-1987 (Rel. 05, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast growth factor) (AFGF) (Beta-endothelial cell growth factor) (ECGF-beta).
DE growth factor (AFGF) (Beta-endothelial cell growth factor) (ECGF-beta).
GN FGF1 OR FGFA.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.
OX NCBI_Taxid=9606;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=86261805; PubMed=3523756;
RA Jaye M., Howk R., Burgess W., Ricca G.A., Chiu I.-M., Ravera M.W.,
RA O'Brien S.J., Modi W.S., Maciag T., Drohan W.N.;
RT "Human endothelial cell growth factor: cloning, nucleotide sequence, and chromosome localization."
RL Science 233:541-545(1986).
RN [2]
RP SEQUENCE FROM N.A.
RX TISSUE=Brain stem;
RA MEDLINE=89343957; PubMed=2474753;
RX Wang W.P., Lehtoma K., Varban M.L., Krishnan I., Chiu I.M.;
RT "Cloning of the gene coding for human class 1 heparin-binding growth factor and its expression in fetal tissues."
RL Mol. Cell. Biol. 9:2387-2395(1989).
RN [3]
RP SEQUENCE FROM N.A.
RX TISSUE=Brain stem;
RA MEDLINE=90265618; PubMed=1693186;
RX Chiu I.M., Wang W.P., Lehtoma K.;
RT "Alternative splicing generates two forms of mRNA coding for human heparin-binding growth factor 1."
RL Oncogene 5:755-762(1990).
RN [4]
RP SEQUENCE FROM N.A.
RX MEDLINE=90073637; PubMed=2590193;
RA Mergia A., Tischer E., Graves D., Tumolo A., Miller J.,
RA Gospodarowicz D., Abraham J.A., Shipley G.D., Fiddes J.C.;
RT "Structural analysis of the gene for human acidic fibroblast growth factor."
RL Biochem. Biophys. Res. Commun. 164:1121-1129(1989).
RN [5]
RP SEQUENCE FROM N.A.
RX MEDLINE=92019819; PubMed=1717925;
RX Wang W.P., Quick D., Balcerzak S.P., Needleman S.W., Chiu I.M.;
RT "Cloning and sequence analysis of the human acidic fibroblast growth factor gene and its preservation in leukemia patients."
RL Oncogene 6:1521-1529(1991).
RN [6]
RP SEQUENCE FROM N.A.
RX MEDLINE=92202857; PubMed=1372643;
RX Li Y.L., Kha H., Golden J.A., Mischelisen A.A.J., Goetzl E.J.,
RA Turck E.J.;
RT "An acidic fibroblast growth factor protein generated by alternate splicing acts like an antagonist."
RL J. Exp. Med. 175:1073-1080(1992).
RN [7]
RP SEQUENCE OF 1-154 FROM N.A.
RX MEDLINE=94069734; PubMed=7504343;
RX Zhao X.M., Yeoh T.K., Hiebert M., First W.H., Miller G.G.;
RT "The expression of acidic fibroblast growth factor (heparin-binding growth factor-1) and cytokine genes in human cardiac allografts and T cells."
RL Transplantation 56:1177-1182(1993).
RN [8]
RP SEQUENCE OF 1-40 FROM N.A.
RX MEDLINE=90365758; PubMed=2393407;
RX Crumley G., Dione C.A., Jaye M.;
RT "The gene for human acidic fibroblast growth factor encodes two upstream exons alternatively spliced to the first coding exon."
RL Biochem. Biophys. Res. Commun. 171:7-13(1990).

[9]
RN SEQUENCE OF 16-155.
RX MEDLINE=86296647; PubMed=2427112;
RA Harper J.W., Strydom D.J., Lobb R.R.;
RT "human class 1 heparin-binding growth factor: structure and homology
to bovine acidic brain fibroblast growth factor.";
RL Biochemistry 25:4097-4103(1986).
RN [10]
RP SEQUENCE OF 16-155.
RX MEDLINE=86295741; PubMed=3527167;
RA Gimenez-gallego G., Conn G., Hatcher V.B., Thomas K.A.;
RT "The complete amino acid sequence of human brain-derived acidic
fibroblast growth factor.";
RL Biochem. Biophys. Res. Commun. 138:611-617(1986).
RN [11]
RP SEQUENCE OF 16-155.
RX MEDLINE=87048871; PubMed=3778488;
RA Gautschi-Sova P., Mueller T., Boehlen P.;
RT "Amino acid sequence of human acidic fibroblast growth factor.";
RL Biochem. Biophys. Res. Commun. 140:874-880(1986).
RN [12]
RP SEQUENCE OF 16-47.
RX MEDLINE=86186784; PubMed=3964259;
RA Gimenez-gallego G., Conn G., Hatcher V.B., Thomas K.A.;
RT "Human brain-derived acidic and basic fibroblast growth factors:
amino terminal sequences and specific mitogenic activities.";
RL Biochem. Biophys. Res. Commun. 135:541-548(1986).
RN [13]
RP SEQUENCE OF 16-49.
RX MEDLINE=86275260; PubMed=3732516;
RA Gautschi P., Fritter-Schroeder M., Eoehlen P.;
RT "Partial molecular characterization of endothelial cell mitogens from
human brain: acidic and basic fibroblast growth factors.";
RL FEBS Lett. 204:203-207(1986).
RN [14]
RP X-RAY CRYSTALLOGRAPHY (2.0 ANGSTROMS).
RX MEDLINE=96194129; PubMed=8652550;
RA Blaber M., Disalvo J., Thomas K.A.;
RT "X-ray crystal structure of human acidic fibroblast growth factor.";
RL Biochemistry 35:2086-2094(1996).
RN [15]
RP STRUCTURE BY NMR OF 24-155.
RX MEDLINE=94358885; PubMed=7521397;
RA Plueda-Lucena A., Jimenez M.A., Nieto J.L., Santoro J., Rico M.,
RT "Gimenez-Gallego G.;
RT "1H-NMR assignment and solution structure of human acidic fibroblast
growth factor activated by inositol hexasulfate.";
RL J. Mol. Biol. 242:81-98(1994).
RN [16]
RP STRUCTURE BY NMR OF 24-155.
RX MEDLINE=97107535; PubMed=8950275;
RA Plueda-Lucena A., Jimenez M.A., Lozano R.M., Nieto J.L., Santoro J.,
RT "Rico M., Gimenez-Gallego G.;
RT "Three-dimensional structure of acidic fibroblast growth factor in
solution: effects of binding to a heparin functional analog.";
RL J. Mol. Biol. 264:162-178(1996).
RN [17]
RP STRUCTURE BY NMR OF 25-155.
RX MEDLINE=98387896; PubMed=9719643;
RA Lozano R.M., Jimenez M., Santoro J., Rico M., Gimenez-Gallego G.;
RT "Solution structure of acidic fibroblast growth factor bound to 1,3,
6-naphthalenetrisulfonate: a minimal model for the anti-tumoral
action of suramin and suradistas.";
RL J. Mol. Biol. 281:899-915(1998).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
THAN DOES HBGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.

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DR EMBL; M13361; AAA79245.1; -;
DR EMBL; X51943; CAA36206.1; -;
DR EMBL; M30492; AAA52446.1; -;
DR EMBL; M30490; AAA52446.1; JOINED.
DR EMBL; M30491; AAA52446.1; JOINED.
DR EMBL; M60515; AAA51672.1; -;
DR EMBL; M60516; AAA51673.1; -;
DR EMBL; M23087; AAA52638.1; -;
DR EMBL; M23086; AAA52638.1; JOINED.
DR EMBL; S67291; AAB29057.2; -;
DR EMBL; X65778; CAA46661.1; -;
DR PIR; A23553; A23553.
DR PIR; A24243; A24243.
DR PIR; A24301; A24301.
DR PIR; A24662; A24662.
DR PIR; A24820; A24820.
DR PIR; A26386; A26386.
DR PIR; A33665; A33665.
DR PIR; S18217; S18217.
DR PDB; 2AFG; 15-OCT-95.
DR PDB; 1AXM; 22-APR-98.
DR PDB; 2AXM; 22-APR-98.
DR PDB; 1RML; 11-NOV-98.
DR PIR; 131220; -;
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; ILL_HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding; Acetylation;
KW 3D-structure.
FT PROPEP 1 15
FT CHAIN 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
FT MOD_RES 2 2 ACETYLTATION.
FT BINDING 24 28 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
SQ SEQUENCE 155 AA; 17460 MM; F586EBBFB09F1580 CMC64;

Query Match 50.2%; Score 395; DB 1; Length 155;
Best Local Similarity 56.6%; Pred. No. 4.2e-34;
Matches 77; Conservative 17; Mismatches 40; Indels 2; Gaps 1;

QY 13 PRGHRKDKRLKCYCKNGGFRLRHPDGRVDGVRKSDPHIKIQLOAEENGVSIRKVCANR 72
DB 19 PPGNKKRRLKLLCSNGSGHFLRLPDGTVGDRDRDQHLQLSAESVGEYIKVSTETGQ 78
QY 73 YLAWKEDGRLASKCVTQCEFFERLESNNNTYRSRYS--SWYVALKRTGYKLGPKT 130
DB 79 YLAWTDDLLGSGYRPNDECFLERLERENHNTYISKHAENKMWGLKKNKSGCRGPR 138
QY 131 GPGOKAILFLPMASAKS 146
DB 139 HYGOKAILFLPLPVSS 154

RESULT 12
FGL_CHICK STANDARD; PRT; 155 AA.
AC P19596;
DT 01-FEB-1991 (Rel. 17, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)

DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF) (Alpha-endothelial cell growth factor).
GN FGFL OR FGF-1.
OS Gallus gallus (chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OX NCBI_TaxID=9031;
RN [1]
RN SEQUENCE FROM N.A.
RX MEDLINE=91347925; PubMed=1715259;
RA Schurch H., Risau W.;
RT "Differentiating and mature neurons express the acidic fibroblast
RT growth factor gene during chick neural development."
RL Development 111:1143-1154(1991).
RN [2]
RN SEQUENCE FROM N.A.
RA Martin G.R., Han J.K.;
RL Submitted (JUL-1995) to the EMBL/GenBank/DBJ databases.
RN [3]
RN SEQUENCE OF 22-48.
RX MEDLINE=88296438; PubMed=3402441;
RA Risau W., Gautschi-Sova P., Boehlen P.;
RT "Endothelial cell growth factors in embryonic and adult chick brain
RT are related to human acidic fibroblast growth factor."
RL EMO J. 7:959-962(1988).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES BFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL; S63263; AAB19629.1; -;
DR EMBL; U31863; AAA80310.1; -;
DR EMBL; S63261; AAD13942.1; -;
DR PIR; S02639; S02639.
DR HSSP; P05230; 2AXM.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IIL_HBGF.
DR Pfam; PF00167; FGF_1.
DR PRINTS; PR00262; IILHBGF.
DR PRODOM; PD000831; HBGF_FGF_1.
DR SMART; SM00442; FGF_1.
DR PROSITE; PS00247; HBGF_FGF_1.
RW Growth factor; Mltogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 15
FT CHAIN 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
FT CHAIN 22 155 ENDOTHELIAL CELL GROWTH FACTOR ALPHA.
FT BINDING 24 28 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
SQ SEQUENCE 155 AA; 17322 MW; 8EDB70545E2B4365 CRC64;
Query Match 49.9%; Score 392.5; DB 1; Length 155;
Best Local Similarity 55.2%; Pred. No. 7.6e-34;
Matches 79; Conservative 21; Mismatches 38; Indels 5; Gaps 2;
OY 2 ALPEGGGCAFPFPPGPHKPKRLYCKNGGFELRIHPDGRVYDREKSDPIKILQDAEERG 61
DB 11 ALPEFG---LPFGNYKPKLLKXCSNGHFLRLPDGKVDGRDSDQIQLQSLAEVNG 67
OY 62 VVISGVCANRYLAKEDGRLLASRCVTDCEFFERLESNNYNTYRSRKY--SWYVALK 119

DB 68 EYIKSTASGOYIAMDITNGLLYSQLPSECLFLEBLENNHYISKRHADKNFVLK 127
OY 120 RTGQYKLGPKTGPQKATFLPM 142
DB 128 KNGSKLSPRTHYGOKATFLPL 150
RESULT 13
FGFL_MOUSE
ID FGFL_MOUSE STANDARD: PRT; 155 AA.
AC P10935;
DT 01-JUL-1989 (Rel. 11, Created)
DT 01-JUL-1989 (Rel. 11, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF).
GN FGFL OR FGF-1 OR FGPA.
OS Mus musculus (Mouse), and
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090, 10116.
RN [1]
RN SEQUENCE FROM N.A.
RX SPECIES=Rat;
RX MEDLINE=89240051; PubMed=2470029;
RA Goodrich S., Yan G.C., Bahrenburg K., Mansson P.E.;
RT "The nucleotide sequence of rat heparin binding growth factor 1
RT (HBGF-1)."
RL Nucleic Acids Res. 17:2867-2867(1989).
RN [2]
RN SEQUENCE FROM N.A.
RX SPECIES=Mouse;
RX MEDLINE=90201563; PubMed=2318343;
RA Hebert J.M., Basilico C., Goldfarb M., Haub O., Martin G.R.;
RT "Isolation of cDNAs encoding four mouse FGF family members and
RT characterization of their expression patterns during embryogenesis."
RL Dev. Biol. 138:454-463(1990).
RN [3]
RN SEQUENCE FROM N.A.
RX SPECIES=Mouse;
RX MEDLINE=97128312; PubMed=8972905;
RA Madai F., Hackshaw K.V., Chin I.M.;
RT "Cloning and characterization of the mouse Fgf-1 gene."
RL Gene 179:231-236(1996).
RN [4]
RN SEQUENCE FROM N.A.
RX SPECIES=Mouse; STRAIN=BALB/C;
RX MEDLINE=97094746; PubMed=8939980;
RA Alam K.Y., Frosthalm A., Hackshaw K.V., Evans J.E., Rotter A.,
RA Chin I.M.;
RT "Characterization of the 1B promoter of fibroblast growth factor 1
RT and its expression in the adult and developing mouse brain."
RL J. Biol. Chem. 271:30263-30271(1996).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL; X14232; CAA32448.1; -;
DR EMBL; M30641; AAA37618.1; -;
DR EMBL; U36459; AAC52969.1; -;

SQ SEQUENCE 155 AA; 17493 MW; F636641F189F9BFD CRC64;

Query Match	48.8%;	Score 384;	DB 1;	Length 155;
Post Local Similarity	55.1%;	Prod No 5	80-33,	

Best Local Similarity 55.1%; Pred. No. 5.8e-33;
Matches 75; Conservative 20; Mismatches 39; Indels 2; Gaps 1;

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QY      13 PRGHRKDPRLCYCKNGEFLRIHPDGRVDSVREKSDPHIKQLQAERGVSATKGVCANR   72
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Db      19 PLGNKKPKLLYCNSNGYFLRIIPDGTVDSJTKDRSDQHQLQLCAESIGEVYIKSTENGQ   78
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Db 19 PLGNKKPKLILCSNGGYFLRLLPDGTVDJTKDRSDQHILQLCAESIGEVYIKSTETGQ 78

73 YLAKEDGRLASKCVTDECFPERLESNNYNYRSRKYS--WYVALKRTGQYKLGPKT 130

[illegible]

QY 131 GPGQAILFLPMSAKS 146

Db 139 HFGQKAILFLPLPVSS 154

Search completed: June 7, 2002, 14:46:42
Job time: 613 sec

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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:35:44 ; Search time 78.17 Seconds

(without alignments)
323.107 Million cell updates/sec

Title: US-09-802-365-2

Perfect score: 787
Sequence: 1 PALPEDGSGAFPPGHFKDP.....GPKTGPCKAILFLPMASAKS 146

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 562222 seqs, 172994929 residues

Total number of hits satisfying chosen parameters: 562222

Minimum DB seq length: 0

Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database :

SPTREMBL_19:*
1: sp_archaea:*
2: sp_bacteria:*
3: sp_fungi:*
4: sp_human:*
5: sp_invertebrate:*
6: sp_mammal:*
7: sp_mhc:*
8: sp_organelle:*
9: sp_phage:*
10: sp_plant:*
11: sp_prodent:*
12: sp_virus:*
13: sp_vertebrate:*
14: sp_unclassified:*
15: sp_virus:*
16: sp_bacteriap:*
17: sp_archaeap:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	776	98.6	196	4 P78443	P78443 homo sapien
2	739	93.9	153	11 Q925A3	Q925A3 mus musculu
3	699	88.8	170	11 Q60487	Q60487 cavia porce
4	693	88.1	130	6 O77767	O77767 canis faml1
5	665	84.5	155	13 Q90Y92	Q90Y92 cynops pyrr
6	576	73.2	111	6 Q9BDX1	Q9BDX1 macaca mula
7	572	72.7	108	6 Q9N1S7	Q9N1S7 capreolus c
8	565	71.8	125	13 Q98TD8	Q98TD8 cynops pyrr
9	488	62.0	109	11 Q925A1	Q925A1 mus musculu
10	484	61.5	112	11 Q925A2	Q925A2 mus musculu
11	479.5	60.9	146	13 Q07659	Q07659 gallus gall
12	479	60.9	101	13 P79706	P79706 cynops pyrr
13	342	43.5	76	6 Q9NOV2	Q9NOV2 ovis aries
14	300	38.1	106	6 Q9N1S8	Q9N1S8 capreolus c
15	287	36.5	114	4 Q00527	Q00527 homo sapien
16	287	36.5	114	4 Q16443	Q16443 homo sapien

17	246	31.3	196	13 Q9YH31	Q9YH31 notophthalm
18	242	30.7	124	13 Q90X05	Q90X05 ambystoma m
19	228	29.0	206	13 Q9YGD8	Q9YGD8 oncorhynch
20	221	28.1	111	13 Q90X01	Q90X01 ambystoma m
21	214	27.2	208	6 Q95L12	Q95L12 sus scrofa
22	210	26.7	191	13 Q9DFC9	Q9DFC9 brachydanio
23	207	26.3	208	13 Q9PYV1	Q9PYV1 xenopus lae
24	207	26.3	212	11 Q9ESL9	Q9ESL9 mus musculu
25	205.5	26.1	207	11 Q9ESL8	Q9ESL8 mus musculu
26	205.5	26.1	207	11 Q9ER05	Q9ER05 mus musculu
27	203	25.8	208	6 Q95K97	Q95K97 macaca fasc
28	203	25.8	212	11 Q9ESY9	Q9ESY9 rattus norv
29	202.5	25.7	212	13 Q42407	Q42407 gallus gall
30	195.5	24.8	134	13 Q90X03	Q90X03 ambystoma m
31	193.5	24.6	213	6 Q9N1B9	Q9N1B9 ovis aries
32	193	24.5	208	4 Q96P59	Q96P59 homo sapien
33	188	23.9	112	13 Q90XP9	Q90XP9 ambystoma m
34	186.5	23.7	186	6 Q95L47	Q95L47 mustela vis
35	186.5	23.7	237	13 Q91A16	Q91A16 rattus norv
36	185.5	23.6	252	11 Q89096	Q89096 rattus norv
37	185.5	23.6	253	13 Q91A15	Q91A15 rattus norv
38	180.5	22.9	185	11 Q9ERN5	Q9ERN5 rattus norv
39	177.5	22.6	181	11 Q924B4	Q924B4 rattus norv
40	176.5	22.4	127	4 Q99517	Q99517 homo sapien
41	175.5	22.3	302	11 Q9CSX5	Q9CSX5 mus musculu
42	172.5	21.9	199	13 Q91A13	Q91A13 gallus gall
43	171	21.7	425	5 Q76831	Q76831 caenorhabdi
44	170.5	21.7	245	13 Q9W6A2	Q9W6A2 gallus gall
45	169.5	21.5	181	13 Q91A17	Q91A17 gallus gall

ALIGNMENTS

RESULT	ID	PRELIMINARY;	PRT;	196 AA.
1	P78443	P78443;		
AC	P78443;			
DT	01-MAY-1997 (TREMBLrel. 03, Created)			
DT	01-MAY-1997 (TREMBLrel. 03, Last sequence update)			
DT	01-JUN-2001 (TREMBLrel. 17, Last annotation update)			
DE	21 KDA BASIC FIBROBLAST GROWTH FACTOR (BFGF).			
GN	BFGF2.			
OS	Homo sapiens (Human).			
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;			
OC	Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.			
OX	NCBI_TaxID=9606;			
RN	[1]			
RP	SEQUENCE FROM N.A.			
RA	MEDLINE=89184522; PubMed=2538817;			
RA	Prats H., Kaghad M., Prats A.C., Klagsbrun M., Lelias J.M.,			
RA	Liauzun P., Chalou P., Tauber J.P., Amaric F., Smith J.A., Caput D.;			
RT	"High molecular mass forms of basic fibroblast growth factor are			
RT	initiated by alternative CUG codons."			
RL	Proc. Natl. Acad. Sci. U.S.A. 86:1836-1840(1989).			
RN	[2]			
RP	SEQUENCE OF 81-168 FROM N.A.			
RA	MEDLINE=93038590; PubMed=1417798;			
RA	Watson R., Anthony F., Pickett M., Lambden P., Masson G.M.,			
RA	Thomas E.J.;			
RT	"Reverse transcription with nested polymerase chain reaction shows			
RT	expression of basic fibroblast growth factor transcripts in human			
RT	granulosa and cumulus cells from in vitro fertilisation patients."			
RL	Biochem. Biophys. Res. Commun. 187:1227-1231(1992).			
DR	EMBL; J04513; AA52532.1; -.			
DR	EMBL; S47380; ADI3853.1; -.			
DR	HSSP; P09038; 1BFF.			
DR	InterPro: IPR002209; HBGF_FGF.			
DR	InterPro: IPR002348; ILL_HBGF.			
DR	Pfam; PF00167; FGF; 1.			
DR	PRINTS; PR00262; ILLHBGF.			
DR	ProDom; PD000831; HBGF_FGF; 1.			
DR	SMART; SM00442; FGF; 1.			

FT BINDING 143 159 HEPARIN (BY SIMILARITY).
FT MOD_RES 4 4 METHYLATION (MONO- OR DI-).
FT MOD_RES 6 6 METHYLATION (MONO- OR DI-).
FT MOD_RES 8 8 METHYLATION (MONO- OR DI-).
FT MOD_RES 8 8 PHOSPHORYLATION (BY SIMILARITY).
FT MOD_RES 136 136 PHOSPHORYLATION (BY SIMILARITY).
SQ SEQUENCE 170 AA; 18354 MW; F36BDC7365FEBC CRC64;

Query Match 88.8%; Score 699; DB 11; Length 170;
Best Local Similarity 91.1%; Pred. NO. 1.le-68;
Matches 133; Conservative 2; Mismatches 5; Indels 6; Gaps 1;

QY 1 PALPDDGSGAAPPFGHFDPRKLYCKNGGFFLRHPDGRVGVREKSDPHIKLOQAEEER 60
DB 31 PALPDDGSGAAPPFGHFDPRKLYCKNGGFFLRHPDGRVGVREKSDPHIKLOQAEEER 84
QY 61 GVSISIKVCANRYLAMKEDGRILASKCVTDECFEERLESNNYNTYRSRKYSSWYVALKR 120
DB 85 GVSISIKVCANRYLAMKEDGRILASKCVTDECFEERLESNNYNTYRSRKYSSWYVALKR 144
QY 121 TGOYKLGPKTGPGRKAILFLPMSAKS 146
DB 145 TGOYKLGSKTGPGRKAILFLPMSAKS 170

RESULT 4
077767 PRELIMINARY; PRT; 130 AA.
AC 077767;
DT 01-NOV-1998 (TREMBLrel. 08, Created)
DT 01-NOV-1998 (TREMBLrel. 08, Last sequence update)
DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (BFGF) (FGF-2) (HEPARIN-BINDING GROWTH FACTOR 2) (HGF-2) (PROSTATROPIN) (PROSTATIC GROWTH FACTOR) (FRAGMENT).
GN BFGF.
OS Canis familiaris (Dog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.
OX NCBI_TaxID=9615;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE-ADRENAL GLAND;
RA Trochta O.A.; Jacobs R.M.; Lamarre J.;
RT "The role of bfgf in canine Hemangiosarcoma."
RL Submitted (APR-1998) to the EMBL/GenBank/DBJ databases.
CC -!- FUNCTION: WIDE-SPECTRUM MITOGENIC, ANGIOGENIC, AND NEUROTROPHIC FACTOR. IMPLICATED IN A MULTITUDE OF PHYSIOLOGIC AND PATHOLOGIC PROCESSES, INCLUDING LIMB DEVELOPMENT, ANGIOGENESIS, WOUND HEALING, AND TUMOR GROWTH. POTENT MITOGEN AND CHEMOATTRACTANT FOR MESENCHYME-DERIVED CELLS. IMPLICATED IN THE DIFFERENTIATION, PROLIFERATION, AND MAINTENANCE OF CELLS IN THE CENTRAL NERVOUS SYSTEM AND IN BONE FORMATION. MAJOR ANGIOGENIC FACTOR THAT ALSO ACTIVATES TUMOR NEOVASCULARIZATION (BY SIMILARITY).
CC -!- SUBUNIT: FORMS A QUATERNARY COMPLEX WITH TWO FGFR1 AND AT LEAST ONE HEPARAN SULFATE (BY SIMILARITY).
CC SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
DR EMBL; AF060562; AAC35912.1; -
DR HSSP; P09038; 1BFF.
DR InterPro; IPR002209; HGF_FGF.
DR InterPro; IPR002348; IL1_HGFG.
DR Pfam; PF00167; FGF_1.
DR PRINTS; PR00262; ILIHGFG.
DR PRODOM; PD000831; HGF_FGF_1.
DR SMART; SM00442; FGF_1.
DR PROSITE; PS00247; HGF_FGF_1.
KW Growth factor; Mitogen; Vascularization; Heparin-binding; Phosphorylation; Developmental protein.
FT NON_TER 1
FT SITE 21 23 CELL ATTACHMENT SITE (POTENTIAL).
FT SITE 63 65 CELL ATTACHMENT SITE (POTENTIAL).
FT BINDING 10 11 HEPARIN (BY SIMILARITY).

FT BINDING 65 65 HEPARIN (BY SIMILARITY).
FT BINDING 103 119 HEPARIN (BY SIMILARITY).
FT MOD_RES 48 48 PHOSPHORYLATION (BY SIMILARITY).
FT MOD_RES 96 96 PHOSPHORYLATION (BY SIMILARITY).
FT NON_TER 130 130
SQ SEQUENCE 130 AA; 14902 MW; 2190876E878FAEA CRC64;

Query Match 88.1%; Score 693; DB 6; Length 130;
Best Local Similarity 99.2%; Pred. NO. 3.4e-68;
Matches 129; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 17 FKDPKRLVCKNGGFFLRHPDGRVGVREKSDPHIKLOQAEEERGVSSIKVCANRYLAM 76
DB 1 FKDPKRLVCKNGGFFLRHPDGRVGVREKSDPHIKLOQAEEERGVSSIKVCANRYLAM 60
QY 77 KEDGRILASKCVTDECFEERLESNNYNTYRSRKYSSWYVALKRFGQYKLGPKTGPGRKA 136
DB 61 KEDGRILASKCVTDECFEERLESNNYNTYRSRKYSSWYVALKRFGQYKLGPKTGPGRKA 120
QY 137 ILFLPMSAKS 146
DB 121 ILFLPMSAKS 130

RESULT 5
090Y92 PRELIMINARY; PRT; 155 AA.
AC 090Y92;
DT 01-DEC-2001 (TREMBLrel. 19, Created)
DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR-2.
GN FGF-2.
OS Cynops pyrrhogaster (Japanese common newt).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Amphibia; Batrachia; Caudata; Salamandroidea; Salamandridae; Cynops.
OX NCBI_TaxID=8330;
RN [1]
RP SEQUENCE FROM N.A.
RA Suetski K.; Nakamura K.; Chiba C.; Saito T.;
RT "Expression of Fgf2 during newt retinal development and regeneration."
RL Submitted (JUL-2001) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB064664; BAB63249.1; -
SQ SEQUENCE 155 AA; 17278 MW; 2B583058538AB8D9 CRC64;

Query Match 84.5%; Score 665; DB 13; Length 155;
Best Local Similarity 85.6%; Pred. NO. 5e-65;
Matches 125; Conservative 7; Mismatches 14; Indels 0; Gaps 0;

QY 1 PALPDDGSGAAPPFGHFDPRKLYCKNGGFFLRHPDGRVGVREKSDPHIKLOQAEEER 60
DB 10 PALPDDGSGAAPPFGHFDPRKLYCKNGGFFLRHPDGRVGVREKSDPHIKLOQAEEER 69
QY 61 GVSISIKVCANRYLAMKEDGRILASKCVTDECFEERLESNNYNTYRSRKYSSWYVALKR 120
DB 70 GVSISIKVCANRYLAMKEDGRILASKCVTDECFEERLESNNYNTYRSRKYSSWYVALKR 129
QY 121 TGOYKLGPKTGPGRKAILFLPMSAKS 146
DB 130 TGOYKLGSKTGPGRKAILFLPMSAKS 155

RESULT 6
Q9BDX1 PRELIMINARY; PRT; 111 AA.
AC Q9BDX1;
DT 01-JUN-2001 (TREMBLrel. 17, Created)
DT 01-JUN-2001 (TREMBLrel. 17, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).

OS Macaca mulatta (Rhesus macaque).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecoidea;
OC Cercopithecinae; Macaca.
OX NCBI_TaxID=9544;
RN [1]
RP SEQUENCE FROM N.A.
RA Sekhon H.S., Keller J.K., Spindel E.R.;
RT "Alterations in Collagen and Elastin Gene Expression in Fetal
RT Pulmonary Vessels in Monkeys Following Prenatal Nicotine Exposure: A
RT Possible Role of alpha7 Nicotinic Acetylcholine Receptor in Persistent
RT Pulmonary Hypertension";
RL Submitted (MAR-2000) to the EMBL/GenBank/DBJ databases.
DR EMBL; AF251270; AAK37962.1; -.
DR HSSP; P09038; 2EGF.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR ProDom; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
FT NON_TER 1
FT 111
SQ SEQUENCE 111 AA; 12633 MW; EC0967A5261F5487 CRC64;

Query Match 73.2%; Score 576; DB 6; Length 111;
Best Local Similarity 98.2%; Pred. No. 1.8e-55;
Matches 109; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY 34 IHDPGRVDGVRKSDPHIKIQLQAEERGVSIRKVCANRYLAMKEDGRLLASKCVTDEC 93
DB 1 IHDPGRVDGVRKSDPHIKIQLQAEERGVSIRKVCANRYLAMKEDGRLLASKCVTDEC 60
OY 94 FFERLESNNYNTYRSKRYSWYVALKRTGYKLGPTGPGOKAIFLPLPMSA 144
DB 61 FFERLESNNYNTYRSKRYSWYVALKRTGYKLGPTGPGOKAIFLPLPMSA 111

RESULT 7
O9N1S7 PRELIMINARY; PRT; 108 AA.
AC O9N1S7.
DT 01-OCT-2000 (TREMBLrel. 15, Created)
DT 01-OCT-2000 (TREMBLrel. 15, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
CN BFGF.
OS Capreolus capreolus (Roe deer).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Cervoidae;
OC Cervidae; Odocoileinae; Capreolus.
OX NCBI_TaxID=9858;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=TESTIS;
RX MEDLINE=20532861; PubMed=11078967;
RA Wagener A., Blotner S., Goritz F., Fickel J.;
RT "Detection of growth factors in the testis of roe deer (Capreolus
RT capreolus).";
RL Anlm. Reprod. Sci. 64:65-75(2000).
DR EMBL; AF152587; AAF73226.1; -.
DR HSSP; P09038; 4EGF.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR ProDom; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
FT NON_TER 1
FT 108
SQ SEQUENCE 108 AA; 11833 MW; EC0967A5261F5487 CRC64;

SO SEQUENCE 108 AA; 12399 MW; 6BC7B7244214567E CRC64;
Query Match 72.7%; Score 572; DB 6; Length 108;
Best Local Similarity 100.0%; Pred. No. 4.9e-55;
Matches 108; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 33 RIHPGRVDGVRKSDPHIKIQLQAEERGVSIRKVCANRYLAMKEDGRLLASKCVTDEC 92
DB 1 RIHPGRVDGVRKSDPHIKIQLQAEERGVSIRKVCANRYLAMKEDGRLLASKCVTDEC 60
OY 93 FFERLESNNYNTYRSKRYSWYVALKRTGYKLGPTGPGOKAIFL 140
DB 61 FFERLESNNYNTYRSKRYSWYVALKRTGYKLGPTGPGOKAIFL 108

RESULT 8
O98TD8 PRELIMINARY; PRT; 125 AA.
AC O98TD8.
DT 01-JUN-2001 (TREMBLrel. 17, Created)
DT 01-JUN-2001 (TREMBLrel. 17, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR-2 (FRAGMENT).
CN FGF-2.
OS Cynops pyrrhogaster (Japanese common newt).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Caudata; Salamandroidae; Salamandridae; Cynops.
OX NCBI_TaxID=8330;
RN [1]
RP SEQUENCE FROM N.A.

RA Mizuno N., Hayashi T., Kondoh H., Okamoto M.;
RT "Cynops fibroblast growth factor-2";
RT Submitted (OCT-2000) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB049625; BAB40835.1; -.
DR HSSP; P09038; 1BFG.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR ProDom; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
FT NON_TER 1
FT 125
SQ SEQUENCE 125 AA; 14244 MW; 5C27F41DC6E60C13 CRC64;

Query Match 71.8%; Score 565; DB 13; Length 125;
Best Local Similarity 87.1%; Pred. No. 3.4e-54;
Matches 108; Conservative 6; Mismatches 10; Indels 0; Gaps 0;

OY 23 LYCKNGGFRLTHDPGRVDGVRKSDPHIKIQLQAEERGVSIRKVCANRYLAMKEDGR 82
DB 2 LYCKNGGFRLTHDPGRVDGVRKSDPHIKIQLQAEERGVSIRKVCANRYLAMKEDGR 61
OY 83 LASKCVTDECFFERLESNNYNTYRSKRYSWYVALKRTGYKLGPTGPGOKAIFLPLM 142
DB 62 MALKWITDECFFERLESNNYNTYRSKRYSWYVALKRTGYKLGPTGPGOKAIFLPLM 121
OY 143 SAKS 146
DB 122 SAKS 125

RESULT 9
O925A1 PRELIMINARY; PRT; 109 AA.
AC O925A1.
DT 01-DEC-2001 (TREMBLrel. 19, Created)
DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
CN FGF2.

OS Mus musculus (Mouse).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
 OX NCBI_TaxID=10090;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC STRAIN=FVB/N;
 RA Dirks R.P., Griep A.E.;
 RT "Multiple novel variants of fibroblast growth factor 2 transcripts are
 RL expressed in mouse embryos."
 RL Submitted (FEB-2001) to the EMBL/GenBank/DBJ databases.
 DR EMBL; AY027358; AAK52310.1; -.
 SQ SEQUENCE 109 AA; 12388 MW; 61074ADE303C860 CRC64;

Query Match 62.0%; Score 488; DB 11; Length 109;
 Best Local Similarity 97.9%; Pred. No. 7.8e-46;
 Matches 94; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 51 IKLOQAERGVSIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRK 110
 |||||
 DB 14 IKLOQAERGVSIGVCANRYLAMKEDGRLLASKCVTEBEFFERLESNNYNTYRSRK 73
 |||||
 OY 111 YSSWVALKRTGQYKLGPKTGPGOKAILFLPMSAKS 146
 |||||
 DB 74 YSSWVALKRTGQYKLGSKTGPGRKAILFLPMSAKS 109
 |||||

RESULT 10
 0925A2 PRELIMINARY; PRT; 112 AA.
 AC 0925A2;
 DT 01-DEC-2001 (TREMblrel. 19, Created)
 DT 01-DEC-2001 (TREMblrel. 19, Last sequence update)
 DT 01-DEC-2001 (TREMblrel. 19, Last annotation update)
 DE FIBROBLAST GROWTH FACTOR 2.
 GN FGF2.
 OS Mus musculus (Mouse).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
 OX NCBI_TaxID=10090;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC STRAIN=FVB/N;
 RA Dirks R.P., Griep A.E.;
 RT "Multiple novel variants of fibroblast growth factor 2 transcripts are
 RL expressed in mouse embryos."
 RL Submitted (FEB-2001) to the EMBL/GenBank/DBJ databases.
 DR EMBL; AY027357; AAK52309.1; -.
 SQ SEQUENCE 112 AA; 12725 MW; B00557ABE0257CGB CRC64;

Query Match 61.5%; Score 484; DB 11; Length 112;
 Best Local Similarity 97.9%; Pred. No. 2.2e-45;
 Matches 93; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 52 KLOQAERGVSIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRK 111
 |||||
 DB 18 KLOQAERGVSIGVCANRYLAMKEDGRLLASKCVTEBEFFERLESNNYNTYRSRK 77
 |||||
 OY 112 SSWVALKRTGQYKLGPKTGPGOKAILFLPMSAKS 146
 |||||
 DB 78 SSWVALKRTGQYKLGSKTGPGRKAILFLPMSAKS 112
 |||||

RESULT 11
 ID 007659 PRELIMINARY; PRT; 146 AA.
 AC 007659;
 DT 01-NOV-1996 (TREMblrel. 01, Created)
 DT 01-NOV-1996 (TREMblrel. 01, Last sequence update)
 DT 01-JUN-2001 (TREMblrel. 17, Last annotation update)
 DE FIBROBLAST GROWTH FACTOR.

GN BFGF.
 OS Gallus gallus (Chicken).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
 OC Gallus.
 OX NCBI_TaxID=9031;
 RN [1]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=93246053; PubMed=7683281;
 RA Borja A.Z., Zeller R., Meijers C.;
 RT "Expression of alternatively spliced bFGF first coding exons and
 RT antisense mRNAs during chicken embryogenesis."
 RL Dev. Biol. 157:110-118(1993).
 RN [2]
 RP SEQUENCE OF 52-85 FROM N.A.
 RX MEDLINE=90382254; PubMed=2401202;
 RA Mitrani E., Gruenbaum Y., Shohat H., Ziv T.;
 RT "Fibroblast growth factor during mesoderm induction in the early chick
 RT embryo."
 RL Development 109:387-393(1990).
 DR EMBL; M95706; AAA48616.1; -.
 DR EMBL; X56804; CAA40139.1; -.
 DR HSSP; P09038; 2BRH.
 DR InterPro; IPR002209; HBGF_FGF.
 DR InterPro; IPR002348; IL1_HBGF.
 DR Pfam; PF00167; FGF_1.
 DR PRINTS; PR00262; IL1HBGF.
 DR ProDom; PD000831; HBGF_FGF_1.
 DR SMART; SM00442; FGF_1.
 DR PROSITE; PS00247; HBGF_FGF_1.
 SQ SEQUENCE 146 AA; 16182 MW; A7CB97BCB456E247 CRC64;

Query Match 60.9%; Score 479.5; DB 13; Length 146;
 Best Local Similarity 67.1%; Pred. No. 9.7e-45;
 Matches 98; Conservative 7; Mismatches 14; Indels 27; Gaps 2;

OY 1 PALPDGSGCAFPFGHFDPKRLYCKNGCFELRHIPDGRVDGVRKSPHIKLOQAER 60
 :|||
 DB 28 PSLSPDGV-----IMERVPRDERVSM-----VKLOQAER 60
 |||||
 OY 61 GVSIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSKYSWVALKR 120
 |||||
 DB 61 GVSIGVCANRYLAMKEDGRLLASKCVTEBEFFERLESNNYNTYRSKYSWVALKR 120
 |||||
 OY 121 TGOYKLGPKTGPGOKAILFLPMSAKS 146
 |||||
 DB 121 TGOYKLGPKTGPGOKAILFLPMSAKS 146
 |||||

RESULT 12
 P79706 PRELIMINARY; PRT; 101 AA.
 AC P79706;
 DT 01-MAY-1997 (TREMblrel. 03, Created)
 DT 01-MAY-1997 (TREMblrel. 03, Last sequence update)
 DT 01-DEC-2001 (TREMblrel. 19, Last annotation update)
 DE BASIC FGF (FRAGMENT).
 OS Cynops pyrrhogaster (Japanese common newt).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Amphibia; Batrachia; Caudata; Salamandridae; Salamandridae; Cynops.
 OX NCBI_TaxID=8330;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE=EMBRYO;
 RA Suzuki A.S., Tabata T., Sakaguchi K., Takabatake T., Takeshima K.,
 RA Kaneda T.;
 RT "Serial expression of the genes in a mesodermalizing ectoderms of
 RT early Cynops gastrula."
 RL Submitted (NOV-1996) to the EMBL/GenBank/DBJ databases.
 DR EMBL; D89443; BAAL3958.1; -.
 DR HSSP; P09038; 4FGF.
 DR InterPro; IPR002209; HBGF_FGF.

DR InterPro: IPR002348; IL1_HBGF.
 DR Pfam: PF00167; FGF, 1.
 DR PRINTS: PR00262; IL1HBGF.
 DR PRODOM: PD000831; HBGF_FGF, 1.
 DR SMART: SM00442; FGF, 1.
 DR PROSITE: PS00247; HBGF_FGF, 1.
 FT NON_TER 1
 FT NON_TER 101
 SQ SEQUENCE 101 AA; 11907 MW; 74A16C866C1F457A CRC64;

Query Match 60.9%; Score 479; DB 13; Length 101;
 Best Local Similarity 88.1%; Pred. No. 6.9e-45;
 Matches 89; Conservative 6; Mismatches 6; Indels 0; Gaps 0;

OY 20 PKRLCKNGGFLRIHPGRVGVREKSDPHIKILOAERGVSIGVCANRYLAMKD 79
 DB 1 PKRLCKNGGFLRIHPGRVGVREKSDPHIKILOAERGVSIGVCANRYLAMKD 60
 OY 80 GRLLASKCVTDECFEERLESNNNTYRSRKYSSWYALKR 120
 DB 61 GRLLASKCVTDECFEERLESNNNTYRSRKYSSWYALKR 101

RESULT 13
 OYNOV2 PRELIMINARY; PRT; 76 AA.

AC OYNOV2:
 DT 01-OCT-2000 (TREMBLrel. 15, Created)
 DT 01-OCT-2000 (TREMBLrel. 15, Last sequence update)
 DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
 DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
 GN FGF-2.
 OS Ovis aries (Sheep).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
 OC Bovidae; Caprinae; Ovis.
 NCBI_TaxID=9940;
 OX 11
 RN SEQUENCE FROM N.A.
 RC TISSUE=FETAL PLACENTAL ARTERY;
 RA Zhang J., Tsol S.C., Magness R.R.;
 RT "Growth factor expression in ovine fetal placental artery endothelial
 cells.";
 RL Submitted (MAR-2000) to the EMBL/GenBank/DBJ databases.
 DR EMBL: AF250027; AAF65566.1; -
 DR HSSP: P09038; 4FGF.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; IL1_HBGF.
 DR Pfam: PF00167; FGF, 1.
 DR PRINTS: PR00262; IL1HBGF.
 DR PRODOM: PD000831; HBGF_FGF, 1.
 DR SMART: SM00442; FGF, 1.
 DR PROSITE: PS00247; HBGF_FGF, 1.
 FT NON_TER 1
 FT NON_TER 76
 SQ SEQUENCE 76 AA; 8796 MW; 7D984E2F97453B20 CRC64;

Query Match 43.5%; Score 342; DB 6; Length 76;
 Best Local Similarity 100.0%; Pred. No. 4.9e-30;
 Matches 65; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 48 DPHIKILOAERGVSIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNNTYR 107
 DB 1 DPHIKILOAERGVSIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNNTYR 60
 OY 108 SRKYS 112
 DB 61 SRKYS 65

RESULT 14

OYNOV2 PRELIMINARY; PRT; 106 AA.
 AC OYNOV2:
 DT 01-OCT-2000 (TREMBLrel. 15, Created)
 DT 01-OCT-2000 (TREMBLrel. 15, Last sequence update)
 DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
 DE ACIDIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
 GN AFGF.
 OS Capreolus capreolus (Roe deer).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Cervidae;
 OC Cervidae; Odocoileinae; Capreolus.
 NCBI_TaxID=9858;
 OX 11
 RN SEQUENCE FROM N.A.
 RC TISSUE=TESTIS;
 RA MEDLINE=20532861; PubMed=11078967;
 RA Wagener A., Blotner S., Goritz F., Fickel J.;
 RT "Detection of growth factors in the testis of roe deer (Capreolus
 capreolus).";
 RL Anim. Reprod. Sci. 64:65-75(2000).
 DR EMBL: AF152586; AAF73225.1; -
 DR HSSP: P05230; 2AFG.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; IL1_HBGF.
 DR Pfam: PF00167; FGF, 1.
 DR PRINTS: PR00262; IL1HBGF.
 DR PRODOM: PD000831; HBGF_FGF, 1.
 DR SMART: SM00442; FGF, 1.
 DR PROSITE: PS00247; HBGF_FGF, 1.
 FT NON_TER 1
 FT NON_TER 106
 SQ SEQUENCE 106 AA; 11931 MW; 2EEC9C1D749A5023 CRC64;

Query Match 38.1%; Score 300; DB 6; Length 106;
 Best Local Similarity 53.8%; Pred. No. 3e-25;
 Matches 57; Conservative 16; Mismatches 31; Indels 2; Gaps 1;

OY 25 CRNGGFLRIHPDGRVGVREKSDPHIKILOAERGVSIGVCANRYLAMKEDGRLLA 84
 DB 1 CRNGGFLRIHPDGRVGVREKSDPHIKILOAERGVSIGVCANRYLAMKEDGRLLA 60
 OY 85 SKCVTDECFEERLESNNNTYRSRKYSSWYALKRGTGKLP 128
 DB 61 SKCVTDECFEERLESNNNTYRSRKYSSWYALKRGTGKLP 106

RESULT 15
 OYNOV2 PRELIMINARY; PRT; 114 AA.

AC OYNOV2:
 DT 01-JAN-1998 (TREMBLrel. 05, Created)
 DT 01-JAN-1999 (TREMBLrel. 09, Last sequence update)
 DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)
 DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
 GN FGF-2 OR FGF2.
 OS Homo sapiens (Human).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Catarrhini; Homiidae; Homo.
 NCBI_TaxID=9606;
 OX 11
 RN SEQUENCE FROM N.A.
 RC TISSUE=BLOOD;
 RA Handschug K., Glaeser C.;
 RT "Polymorphism in the 5' untranslated region of the FGF-2 gene: C to T
 transition (79 bp upstream of the first CUG codon).";
 RL Submitted (May-1997) to the EMBL/GenBank/DBJ databases.
 [2]
 RN SEQUENCE FROM N.A.
 RC TISSUE=BLOOD;
 RA Handschug K., Archouk E., Glaeser C.;
 RT "Mutations in the 5' untranslated region of the FGF-2 gene: transition

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GenCore version 4.5
Copyright (c) 1993 - 2000 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: June 7, 2002, 14:35:39 ; Search time 93.91 Seconds
(Without alignments)
172.684 Million cell updates/sec

Title: US-09-802-365-4

Perfect score: 785
Sequence: 1 PALPEDGGSGAFPFGHKDP.....GSKTGPQKAILFLPMASAKS 146

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 747574 seqs, 111073796 residues

Total number of hits satisfying chosen parameters: 747574

Minimum DB seq length: 0

Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Database : A_Geneseq_032802.*

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11: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1990.DAT:*
12: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1991.DAT:*
13: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1992.DAT:*
14: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1993.DAT:*
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17: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1996.DAT:*
18: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1997.DAT:*
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20: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA1999.DAT:*
21: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA2000.DAT:*
22: /SIDSI/gcgdata/hold-geneseq/geneseqp-emb1/AA2001.DAT:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	785	100.0	146	9	AAp82579
2	785	100.0	146	13	AAr25423
3	785	100.0	146	21	AAy87847
4	785	100.0	146	22	AAE11974
5	785	100.0	146	22	AAg62612
6	785	100.0	148	13	AAr22233
7	785	100.0	153	16	AAr71414
8	785	100.0	154	16	AAr71413
9	785	100.0	154	17	AAr89473
10	785	100.0	155	8	AAp70301
11	785	100.0	155	10	AAp94038

12	785	100.0	155	11	AAr05314	Human basic fibrob
13	785	100.0	155	13	AAr22232	bFGF truncated at
14	785	100.0	155	14	AAr40159	Human bFGF peptide
15	785	100.0	155	15	AAr53270	glu3,5 hbrGF Hom
16	785	100.0	155	16	AAr80777	Fibroblast growth
17	785	100.0	155	16	AAr70204	Human bFGF, Homo
18	785	100.0	155	16	AAr70823	FGF-2, Homo sapie
19	785	100.0	155	18	AAW33338	Human fibronectin
20	785	100.0	155	18	AAW19595	Biologically activ
21	785	100.0	155	19	AAV05456	Fibronectin recept
22	785	100.0	155	19	AAW75712	Fibroblast growth
23	785	100.0	155	19	AAW71386	S5V mutant of fib
24	785	100.0	155	19	AAW71379	18 kda form of fib
25	785	100.0	155	19	AAW53023	Fibroblast growth
26	785	100.0	155	20	AAW93380	18 kD isoform of h
27	785	100.0	155	21	AAr10298	Fibroblast growth
28	785	100.0	155	21	AAr96873	Human fibroblast g
29	785	100.0	155	21	AAr96885	Human fibroblast g
30	785	100.0	155	21	AAr96893	Human fibroblast g
31	785	100.0	155	21	AAr90411	FGF-2 (bFGF), SEQ
32	785	100.0	155	21	AAr90448	Human FGF-2 (bFGF)
33	785	100.0	155	21	AAr32334	Human fibroblast g
34	785	100.0	155	22	AAg65648	Human fibroblast g
35	785	100.0	155	22	AAE11976	Human fibroblast g
36	785	100.0	155	22	AAr5813	Human fibroblast g
37	785	100.0	155	22	AAr99918	Human FGF-2 protei
38	785	100.0	155	22	AAg64317	Human FGF-2 protei
39	785	100.0	155	22	AAr84597	Heart muscle cell
40	785	100.0	155	22	AAr84597	Amino acid sequenc
41	785	100.0	155	22	AAr72909	Truncated form of
42	785	100.0	155	22	AAr61662	FGF2 protein. Hom
43	785	100.0	155	22	AAr50274	Human basic fibrob
44	785	100.0	157	8	AAp71085	Sequence of human
45	785	100.0	158	18	AAW31664	Leaderless protein

ALIGNMENTS

RESULT 1

AAp82579	standard; protein; 146 AA.
AC	AAp82579;
XX	
DT	02-NOV-1990 (first entry)
XX	
DE	Human basic fibroblast growth factor.
XX	
KM	Basic fibroblast growth factor; anticancer agent; bFGF.
XX	
OS	Homo sapiens.
XX	
PN	EP288687-A.
XX	
PD	02-NOV-1988.
XX	
PF	01-MAR-1988; 88EP-0103047.
XX	
PR	03-MAR-1987; 87JP-0049759.
PR	26-AUG-1987; 87JP-0211599.
PR	26-JAN-1988; 88JP-0016260.
XX	
PA	(TAKE) TAKEDA CHEMICAL IND KK.
XX	
PI	Iwane M, Kurokawa T, Igarashi K;
XX	
DR	WPI; 1988-308739/44.
DR	N-PDB; AAN82192.
XX	
PT	New monoclonal antibodies specific for basic fibroblast growth
XX	factor - used in immunoassay, purificn. and as anticancer agent.

CC (VII), 207 (VIII) and (XI), 215 (IX), and 208 (X) amino acids (aa),
CC given in the specification, its angiogenically active fragment or
CC muicin. The product of the invention has angiogenic and cardiac
CC activity. (i) is used for treating a human patient for coronary artery
CC disease, and inducing angiogenesis in the human heart. (1) further
CC provides an adjunct for reducing post myocardial infarction injury in
CC humans. The unit dose provides the human patient with a rapid and
CC therapeutic cardiac angiogenesis sufficient to obviate surgical
CC intervention and results in an superior increase in the treated
CC patients's exercise tolerance time (ETT). It also provides a safe and
CC therapeutically efficacious treatment for the patients with coronary
CC artery disease that lasts at least 6 months before a further treatment
CC is needed. The method provides superior increase of 1.5-2 minutes in
CC the treated patient's (ETT), compared to an increase of 30 seconds for
CC current modes treatment. This sequence represents the human FGF-2 protein
CC fragment described in the method of the invention.

XX Sequence 146 AA;

Query Match 100.0%; Score 785; DB 21; Length 146;
Best Local Similarity 100.0%; Pred. No. 1.5e-75;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PALPEDGSGGAPPGHFKDPKRLYCKNGGFLRHPDGRVDSVRKSPHRIQLQAEER 60
Db 1 palpedgsggafppghfkdpkrllycknggflrhpdgvgdvrvksdphiklqgaer 60

QY 61 GVSISIKVCANRYLAMKEDGRLASKCYTDECFEERLESNNYNTYRSKRTSWYALKR 120
Db 61 gvsikgvcanylamkedgrllaskcytdecfferlesnnyntyrskrkywyalvr 120

QY 121 TGOYKLGSKTGPGRKALIFLPMKSAKS 146
Db 121 tgyklygsktpgqkallflpmsaks 146

RESULT 4
AAE11974
ID AAE11974 standard; Protein; 146 AA.

AC AAE11974;
DT 18-DEC-2001 (first entry)

DE Human fibroblast growth factor-2 (FGF-2) #1.

DE Human; therapy; erectile dysfunction; fibroblast growth factor-2; FGF-2;
KW epidermal growth factor; EGF; platelet derived growth factor; PDGF;
KW vascular endothelial growth factor; VEGF; tissue growth factor; TGF;
KW impotence; vasotrophic.

XX Homo sapiens.
XX OS
XX MO200168125-A2.
XX PD
XX 20-SEP-2001.
XX PF
XX 09-MAR-2001; 2001WO-US07702.
XX PR
XX 10-MAR-2000; 2000US-188480P.
XX PR
XX 11-MAY-2000; 2000US-203415P.
XX PA
XX (CHIR) CHIRON CORP.
XX PI
XX Whitehouse NJ;
XX WP1: 2001-616273/71.
XX DR
XX N-PSDB; AAD19521.
XX PT
XX Treating or preventing erectile dysfunction, comprises administering
XX growth factor, particularly fibroblast growth factor to blood vessels
XX in the penis, groin or leg

XX Claim 6: Page 32; 35pp; English.

XX The present invention relates to a method for treating or preventing
XX erectile dysfunction, comprising administering a fibroblast growth
XX factor (FGF), epidermal growth factor (EGF), platelet derived growth
XX factor (PDGF), vascular endothelial growth factor (VEGF) or tissue
XX growth factor (TGF). The invention is used to treat or prevent erectile
XX dysfunction, or impotence. The present sequence is a human FGF-2
XX protein.

XX Sequence 146 AA;

Query Match 100.0%; Score 785; DB 22; Length 146;
Best Local Similarity 100.0%; Pred. No. 1.5e-75;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PALPEDGSGGAPPGHFKDPKRLYCKNGGFLRHPDGRVDSVRKSPHRIQLQAEER 60
Db 1 palpedgsggafppghfkdpkrllycknggflrhpdgvgdvrvksdphiklqgaer 60

QY 61 GVSISIKVCANRYLAMKEDGRLASKCYTDECFEERLESNNYNTYRSKRTSWYALKR 120
Db 61 gvsikgvcanylamkedgrllaskcytdecfferlesnnyntyrskrkywyalvr 120

QY 121 TGOYKLGSKTGPGRKALIFLPMKSAKS 146
Db 121 tgyklygsktpgqkallflpmsaks 146

RESULT 5
AAG62612
ID AAG62612 standard; Protein; 146 AA.

AC AAG62612;
DT 06-SEP-2001 (first entry)

DE Human basic insulin-like growth factor 1.

DE Human; insulin-like growth factor 1; IGF-1; neuronal damage prevention;
KW central nervous system insult; hypothermia; neuroprotective;
KW ischaemia cerebrovascular disease.

XX Homo sapiens.
XX OS
XX MO200137855-A2.
XX PN
XX 31-MAY-2001.
XX PD
XX 26-OCT-2000; 2000WO-US41591.
XX PF
XX 27-OCT-1999; 99US-0161798.
XX PR
XX (CHIR) CHIRON CORP.
XX PA
XX Gluckman PD, Guan J, Gunn AJ;
XX PI
XX WP1: 2001-355748/37.
XX DR
XX Preventing or treating neuronal damage of the central nervous system,
XX comprises modulating the cerebral temperature and administering a
XX neurological therapeutic agent -
XX PS
XX Disclosure: Page 40-41; 41pp; English.

XX The present invention describes a method of preventing or treating
XX neuronal damage following a central nervous system insult, involving
XX modulating the cerebral temperature and administering a neurologic
XX therapeutic agent. The agent may be a growth factor, such as fibroblast
XX growth factor (FGF) or insulin-like growth factor (IGF). The method is
XX particularly useful in the treatment of ischaemia cerebrovascular

Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
OY 1 PALPEDGSGARPFGHFDKPKRLYCKNGGFEFLRHPDGVGVREKSDPHIKLOQAER 60
    |||
Db 8 palpedgsgarppgfhfkdkprklycknggflrlhpdgvgvrekspdhiklqjaeer 67
OY 61 GVSISIKGCANRYLAMKEDGRLLASKCVYDECFPERLESNNYNTYRSRKYTSWYVALKR 120
    |||
Db 68 gvsiskgvcanylamkedgrllaskcvrdecfferlesnnyntyrskyswvalkr 127
OY 121 TGQYKLGSKTGPQKAILFLPMSAKS 146
    |||
Db 128 tqgylgsktgpqkailflpmsaks 153
```

RESULT 8

AA871413 ID AAR71413 standard; protein; 154 AA.

XX AC AAR71413;

DT 18-OCT-1995 (first entry)

DE Human basic fibroblast growth factor.

XX basic fibroblast growth factor; bFGF; homo sapiens; human; gel;
KW periodontal disease; regeneration; re-attachment; bone; membrane;
KW cementum; dentine.

XX Homo sapiens.

XX WO9505840-A.

XX PD 02-MAR-1995.

XX PF 25-AUG-1993; 93WO-JP01211.

XX PR 25-AUG-1993; 93WO-JP01211.

XX PA (KAKE) KAKEN PHARM CO LTD.

XX PI Amakawa M, Asano T, Nakano Y, Saga K, Sugimoto H;

XX PI Terashima A;

XX DR WPI; 1995-106672/14.

XX PT Dental treatment containing basic fibroblast growth factor - for
PT treating periodontal disease and promoting implant fixation and
PT dentine regeneration

PS Claim 7; Page 18; 35pp; Japanese.

XX This is a basic fibroblast growth factor (bFGF) of human origin. It
CC is used in a compsn. to treat periodontal disease. The compsn.
CC promotes regeneration an re-attachment of the bone of the tooth
CC socket, the periodontal membrane and the cementum and regeneration
CC of dentine. The bFGF may be prepred. by recombinant methods, and is
CC pref. formulated in a gel for application to the affected area.

XX SQ Sequence 154 AA;

Query Match 100.0%; Score 785; DB 16; Length 154;
Best Local Similarity 100.0%; Pred. No. 1,6e-75;

Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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OY 1 PALPEDGSGARPFGHFDKPKRLYCKNGGFEFLRHPDGVGVREKSDPHIKLOQAER 60
    |||
Db 9 palpedgsgarppgfhfkdkprklycknggflrlhpdgvgvrekspdhiklqjaeer 68
OY 61 GVSISIKGCANRYLAMKEDGRLLASKCVYDECFPERLESNNYNTYRSRKYTSWYVALKR 120
    |||
Db 69 gvsiskgvcanylamkedgrllaskcvrdecfferlesnnyntyrskyswvalkr 128
```

```
OY 121 TGQYKLGSKTGPQKAILFLPMSAKS 146
    |||
Db 129 tqgylgsktgpqkailflpmsaks 154
```

RESULT 9

AAR89473 ID AAR89473 standard; protein; 154 AA.

XX AC AAR89473;

DT 08-AUG-1996 (first entry)

DE Human basic fibroblast growth factor.

XX Human; basic fibroblast growth factor; bFGF; oral mucosal disease; mouth;
KW stomatitis; inflammation; chemotherapy; radioactive treatment; deletion.

XX Homo sapiens.

XX Key Location/Qualifiers

FT Misc-difference 1 /note= "this residue may be opt. deleted"

PN JP08027024-A.

XX PD 30-JAN-1996.

XX PF 12-JUL-1994; 94JP-0182791.

XX PR 12-JUL-1994; 94JP-0182791.

XX PA (KAKE) KAKEN PHARM CO LTD.

XX DR WPI; 1996-136204/14.

XX PT Agent for treating oral mucosa diseases - contg. basic fibroblast
PT growth factor as active component, where diseases are caused by
PT chemotherapy or radioactive treatment

XX PS Disclosure; Page 7; 8pp; Japanese.

XX This is the amino acid of the human basic fibroblast growth factor used
CC in a novel method of treating oral mucosal disease esp. stomatitis and
CC mucosal inflammation caused by chemotherapy or by radioactive treatment.
CC The same protein lacking the N-terminal Ala can also be used in the
CC treatment.

XX SQ Sequence 154 AA;

Query Match 100.0%; Score 785; DB 17; Length 154;
Best Local Similarity 100.0%; Pred. No. 1,6e-75;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
OY 1 PALPEDGSGARPFGHFDKPKRLYCKNGGFEFLRHPDGVGVREKSDPHIKLOQAER 60
    |||
Db 9 palpedgsgarppgfhfkdkprklycknggflrlhpdgvgvrekspdhiklqjaeer 68
OY 61 GVSISIKGCANRYLAMKEDGRLLASKCVYDECFPERLESNNYNTYRSRKYTSWYVALKR 120
    |||
Db 69 gvsiskgvcanylamkedgrllaskcvrdecfferlesnnyntyrskyswvalkr 128
OY 121 TGQYKLGSKTGPQKAILFLPMSAKS 146
    |||
Db 129 tqgylgsktgpqkailflpmsaks 154
```

RESULT 10

AAP70301 ID AAP70301 standard; protein; 155 AA.

XX

AC	AAP70301.	(first entry)	
DT	05-JUN-1991		
XX			
XX			
DT	Sequence of human basic fibroblast growth factor (hbgf).		
XX			
DE	Fibroblast growth promoter; mesoderm cell growth promoter;		
XX	wound healing.		
KW			
XX			
OS	Homo sapiens.		
XX			
XX	Key	Location/Qualifiers	
FT	Peptide	1..9	
FT	Protein	10..155	
FT		/note="claimed"	
XX			
PN	EP237966-A.		
XX			
XX	23-SEP-1987.		
PD			
XX			
PE	12-MAR-1987;	87EP-0103601.	
XX			
PR	29-SEP-1986;	86JP-0231428.	
PR	14-MAR-1986;	86JP-0057919.	
PR	04-APR-1986;	86JP-0082699.	
PR	09-OCT-1986;	86JP-0241053.	
XX			
PA	(TAKE) TAKEDA CHEMICAL IND KK.		
XX			
PI	Kurokawa T, Sasada R, Iwane M, Igarashi K;		
DR	WPI: 1987-265363/38.		
DR	N-PSDB: AAN70494.		
XX			
XX	Human basic fibroblast growth factor - produced by recombinant		
PT	DNA techniques, useful for healing wounds, prophylaxis,		
PT	thrombosis and arteriosclerosis treatment, etc.		
XX			
PS	Disclosure: Fig 1; 38pp: English.		
XX			
XX	hbgf is produced using cDNA prep. from RNA isolated from W138 or		
CC	IM930 human fibroblasts. hbgf promotes growth of fibroblasts and		
CC	other mesoderm-derived cells and is useful for promoting healing of		
CC	wounds (eg burns), for prophylaxis and treatment of thrombosis and		
CC	arteriosclerosis, and as a promoter for cell culture.		
XX			
SQ	Sequence 155 AA:		
	Query Match 100.0%; Score 785; DB 8; Length 155;		
	Best Local Similarity 100.0%; Pred. No. 1,66-75;		
	Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;		
QY	1 PALPEDGGSGAPPGCHFKDKPRLYCKNGGFETRIHPDGHVDCVREKSDPHIKLOAER 60		
DB	10 palpedgsgaifppghfkprklycknggfifiripdgrvdcvrexsdphiklqaeer 69		
QY	61 GYVSTKGVANNTYLMKKEGRLASGVTDCEFFERLESNNYNTYRSKRTYSWYALR 120		
DB	70 gystkgyvanntylmkkegrllaskcvdceffierlesnnnyltskyswyalr 129		
QY	121 TGOYKLGSKTGPQKALIFLPMSSAS 146		
DB	130 tgyklgsktgpqkallflpmsake 155		
	RESULT 11		
	AAP94038		
ID	AAP94038 standard; protein; 155 AA.		
XX			
AC	AAP94038;		
XX			
DT	25-JUN-1990 (first entry)		

Query Match	Best Local Similarity	100.0%: Score 785; DB 10; Length 155;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0		
1 PALPEDGSGAPPGHFKDPKRLCYCKNGGFLRLIHDPGRVGVREKSDPHIKLQDAER 60		
10 palpedgsgatpphfkdpkrlcycknggflrlhdpdgrvdrvrekspdhiklqlqaeer 69		
61 GYVSTIKGVANRYLAKKEGRILASVCYVDECFPERLSENNYNYRSKPYTSWYVALKR 120		
70 gvyvstikgvancanrylamkedgrilaskvcvdeciflerlesmnyntyrskyswyvalkr 129		
121 TGOYKLGSKRTGCGAKATLFLPMSAKS 146		

Db 130 tgykylgsktgpqgkallflpmsaks 155

RESULT 12

AA05314
ID AAR05314 standard; protein: 155 AA.

XX AAR05314;

DT 10-OCT-1990 (first entry)

DE Human basic fibroblast growth factor (FGF).

KW Fibroblast growth factor; FGF; yeast; ischemia; ds.

XX Synthetic.

PN W09005184-A.

PD 17-MAY-1990.

PF 03-NOV-1989; 89MO-0004821.

PR 04-NOV-1988; 88US-0267408.

PA (CHIR-) CHIRON CORP.

PI Barr PJ;

DR WPI; 1990-178825/23.

DR N-PSDB; AAQ04716.

PT yeast prodn. of human basic and acidic fibroblast growth factor -

PT with acetylated amino-terminal, useful eg. for treating cell

PS senescence, neuronal regression and cell death.

XX Disclosure; ; P; English.

CC FGF have applications such as in vivo nerve regeneration, wound

CC repair ischemia and corneal repair. They may also have therapeutic

CC uses in the CNS and PNS in treatment of cell death and neuronal

CC regression.

XX Sequence 155 AA;

XX

Query Match 100.0%; Score 785; DB 11; Length 155;

Best Local Similarity 100.0%; Pred. No. 1.6e-75;

Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PALPEDGGSGAFPPGHFDPKRLCYCKNGGFRLRHPDGRVDGVREKSDPHIKLOQAEER 60

Db 10 palpedgsgsagfppghfkdprkrlcycknggfflrhpdgdrvvgvrekspdhiklqgaer 69

QY 61 GVSISIKVCANRYLAMKEDGRSLASKCVTDCEFFERLESNNYNTYRSRKYTSWYALKR 120

Db 70 gvsaikgvcancrlylamkedgrllaskcvtdcefferlesnnyntyrskylswyalkr 129

QY 121 TGOYKLGSKTGPQKAILFLPMSAKS 146

Db 130 tgykylgsktgpqgkallflpmsaks 155

RESULT 13

AA05314
ID AAR22232 standard; protein: 155 AA.

XX AAR22232;

DT 23-JUN-1992 (first entry)

DE bFGF truncated at its N-terminus.

KW Basic fibroblast growth factor; adduct; heparin; heparan sulphate;

KW pepsin A; cathepsin D; wounds; burns.

XX Synthetic.

PN W09202539-A.

PD 20-FEB-1992.

PF 30-JUL-1991; 91MO-EP01428.

PR 02-AUG-1990; 90GB-0017008.

PA (FARM) FARMITALIA C ERBA SRL.

PI Monsan P, Paul F, Betbeder D, Sarmientos P;

DR WPI; 1992-080021/10.

PT Prepn. of basic fibroblast growth factor - by forming adduct with

PT heparin or heparan sulphate and cleaning with pepsin A or

PT cathepsin D

PS Claim 4; Page 27; 36pp; English.

XX The peptide sequence was deduced from the synthetic DNA sequence

XX prepd. as described in EP-363675. E. coli cells transformed with the

CC synthetic DNA were lysed and the supernatant purified, giving a

CC 30:50 mixture of a 154 residue bFGF (2-155) having the amino acid

CC sequence of the 155 residue form (Abraham et al., Science, 233, 545-

CC 548, 1986) shown here but without the N-terminal Met; and a 153

CC residue bFGF (3-155). An adduct of bFGF formed with heparin or

CC heparan sulphate contg. the bFGF 9-10 leu-pro bond can be cleaved

CC with pepsin A or cathepsin D to cleave this bond and release a

CC peptide with the N-terminus de deleted up to and including residue

CC 9, sequentially. This cleavage method can be used to obtain a pure

CC form of the 146 amino acid bFGF (10-155) bFGF. The prod. can be used

CC to treat wounds and burns.

CC See also AAR22233.

XX Sequence 155 AA;

XX

Query Match 100.0%; Score 785; DB 13; Length 155;

Best Local Similarity 100.0%; Pred. No. 1.6e-75;

Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 PALPEDGGSGAFPPGHFDPKRLCYCKNGGFRLRHPDGRVDGVREKSDPHIKLOQAEER 60

Db 10 palpedgsgsagfppghfkdprkrlcycknggfflrhpdgdrvvgvrekspdhiklqgaer 69

QY 61 GVSISIKVCANRYLAMKEDGRSLASKCVTDCEFFERLESNNYNTYRSRKYTSWYALKR 120

Db 70 gvsaikgvcancrlylamkedgrllaskcvtdcefferlesnnyntyrskylswyalkr 129

QY 121 TGOYKLGSKTGPQKAILFLPMSAKS 146

Db 130 tgykylgsktgpqgkallflpmsaks 155

RESULT 14

AA05314
ID AAR40159 standard; peptide: 155 AA.

XX AAR40159;

DT 07-FEB-1994 (first entry)

DE Human bFGF peptide fragment #1.

XX Human; fibronectin; FN; fibroblast cell growth factor; FGF;

XX fusion; cell adhesion; cell growth; anti-aging; cosmetics;

XX wound healing; surgery.

XX OS Homo sapiens.
XX PN JP05178897-A.
XX PD 20-JUL-1993.
XX PF 05-MAR-1992; 92JP-0083220.
XX PR 14-OCT-1991; 91JP-0291959.
XX PA (TAKI) TAKARA SHUZO CO LTD.
XX DR WPI: 1993-261656/33.
XX DR N-PSDB: AAQ46943.
XX PT Synthetic functional polypeptide to promote wound healing, etc.
XX PT contg. cell adhesion polypeptide from fibronectin and fibroblast
XX PT growth factor polypeptide, opt. linked by spacer
XX PS Disclosure: Page 7; 13pp; Japanese.
XX CC The sequences given in AAR40158-63 represent human fibronectin (FN)
XX CC and fibroblast cell growth factor (bFGF) fragments which are used in
XX CC the production of fusion polypeptides which are able to stimulate
XX CC cell adhesion and cell growth. These fusion peptides may be used
XX CC for anti-aging cosmetics and in wound healing after surgery.
XX SQ Sequence 155 AA;
Query Match 100.0%; Score 785; DB 14; Length 155;
Best Local Similarity 100.0%; Pred. No. 1.6e-75;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 PALPEDGSGAFPPGHEHDPKRLYCKNGCFRLRHPDGRVGVREKSPHKLQIAEER 60
DB 10 palpedgsgafppghfkdprkrllyckngfflrlhpdgdrvgsdphiklqiaeer 69
QY 61 GVSTIKGVCANRYLAMKEDGRLASKCVTDECFEPERLESNNYNTYRSRKYTSWYALKR 120
DB 70 gvstikgvcancrylamkedgrllaskcvtdcefferlesnnyntyrskyltswyvalkr 129
QY 121 TGQYKLGSKTGPGQKAILFLPMSAKS 146
DB 130 tgqyklgsktgpqgkailflpmsaks 155
RESULT 15
AAR53270
ID AAR53270 standard; Protein: 155 AA.
XX AC AAR53270;
XX DT 04-JAN-1995 (first entry)
XX DE glul3,5 hbFGF.
XX KW Recombinant; chimeric; basic fibroblast growth factor; bFGF;
KW glul3,5 FGF; expression; E. coli; stabilisation; disulphide bonds;
KW thio-disulphide interchange; burns; surgical incisions; wound healing;
KW skin ulcers; bed sores; cardiovascular conditions; bone repair;
KW musculoskeletal injuries; neurodegenerative disease.
XX OS Homo sapiens.
XX FT Key Location/Qualifiers
FT MISC-difference 3 /label= Ala3Glu
FT MISC-difference 5 /label= Ser5Glu
XX PN US5310883-A.

XX PD 10-MAY-1994.
XX PF 23-NOV-1990; 90US-0615202.
XX PR 23-NOV-1990; 90US-0615202.
XX PR 04-NOV-1991; 91US-0783694.
XX PA (AMCY) AMERICAN CYANAMID CO.
XX PI Bohlen P, Gluzman Y, Seddon AP;
XX DR WPI: 1994-150500/18.
XX DR N-PSDB: AAQ64582.
XX PT Novel recombinant chimeric fibroblast growth factors - efficiently
XX PT expressed in E.coli, useful for accelerating wound healing
XX PS Claim 3; Column 15-18; 11pp; English.
XX CC The sequences given in AAR53270-71 represent recombinant chimeric basic
XX CC fibroblast growth factors (bFGF). These proteins comprise a basic FGF
XX CC having 155 amino acids in which Ala3 and Ser5 have been replaced by
XX CC Glu, and opt. Cys78 and Cys96 are replaced by Lys, Asp, Glu, Asn, Gln,
XX CC His, Ile, Leu, Val, Phe, Tyr, Met, Thr, Pro, Ala, Gly, Arg, or Trp,
XX CC pref. Ser. The glul3,5 FGF has the mitogenic properties of tissue
XX CC derived bFGF, but expression in E. coli is significantly greater than
XX CC the native sequence, allowing high yield production of the bFGF.
XX CC Replacing Cys78 and Cys96 by Ser causes stabilisation of the growth
XX CC factor by eliminating thio-disulphide interchange. This facilitates
XX CC the purification and enhances the stability of the isolated protein.
XX CC The bFGF have therapeutic applications for healing burns, surgical
XX CC incisions and other wounds, for treating skin ulcers including bed
XX CC sores, for cardiovascular conditions and restarting blood flow after
XX CC heart attacks by revascularising the damaged tissue, for enhancing
XX CC bone repair and treating musculoskeletal injuries, and in neuro-
XX CC degenerative and other disease states.
XX SQ Sequence 155 AA;
Query Match 100.0%; Score 785; DB 15; Length 155;
Best Local Similarity 100.0%; Pred. No. 1.6e-75;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 PALPEDGSGAFPPGHEHDPKRLYCKNGCFRLRHPDGRVGVREKSPHKLQIAEER 60
DB 10 palpedgsgafppghfkdprkrllyckngfflrlhpdgdrvgsdphiklqiaeer 69
QY 61 GVSTIKGVCANRYLAMKEDGRLASKCVTDECFEPERLESNNYNTYRSRKYTSWYALKR 120
DB 70 gvstikgvcancrylamkedgrllaskcvtdcefferlesnnyntyrskyltswyvalkr 129
QY 121 TGQYKLGSKTGPGQKAILFLPMSAKS 146
DB 130 tgqyklgsktgpqgkailflpmsaks 155

Search completed: June 7, 2002, 14:35:39
Job time: 276 sec

GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:37:15 ; Search time 47.03 Seconds
(without alignments)
298.300 Million cell updates/sec

Title: US-09-802-365-4

Sequence: 1 PALPDGSGAFFFFGFRDP.....GSKTGPCOKAIIPLMSAKS 146

Scoring table:

BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283138 seqs, 96089334 residues

Total number of hits satisfying chosen parameters: 283138

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%

Listing first 45 summaries

Database :
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	785	100.0	210	2 A32398	basic fibroblast g
2	776	98.9	157	1 GKBOA	basic fibroblast g
3	770	98.1	146	1 S00185	basic fibroblast g
4	761.5	97.0	154	2 A31674	basic fibroblast g
5	756.5	96.4	154	2 C37360	basic fibroblast g
6	738	94.0	137	2 I46711	fibroblast growth
7	723	92.1	189	2 A48834	basic fibroblast g
8	719.5	91.7	164	2 S31622	basic fibroblast g
9	646	82.3	155	1 A40117	basic fibroblast g
10	427.5	54.5	125	2 A32484	basic fibroblast g
11	396	50.4	155	1 A60721	acidic fibroblast
12	386	49.2	155	1 A33655	acidic fibroblast
13	383.5	48.9	155	2 A60130	acidic fibroblast
14	382	48.7	155	2 S04147	acidic fibroblast
15	382	48.7	155	2 D37360	acidic fibroblast
16	380	48.4	152	2 JH0476	acidic fibroblast
17	378	48.2	155	2 JH0055	acidic fibroblast
18	375	47.8	155	1 GKBOA	acidic fibroblast
19	255	32.5	194	2 I50710	fibroblast growth
20	252.5	32.2	256	2 JCA627	fibroblast growth
21	250	31.8	208	2 S14192	fibroblast growth
22	249	31.7	208	2 S20102	fibroblast growth
23	248.5	31.7	206	1 TVH0HS	fibroblast growth
24	248	31.6	220	2 I50588	fibroblast growth
25	245	31.3	206	2 JCA268	fibroblast growth
26	240	30.8	264	2 A36207	fibroblast growth
27	230.4	30.4	266	2 S68144	fibroblast growth
28	207.3	30.3	187	2 S23595	embryonic fibroblast
29	207.3	23.7	1	1 S39582	transforming prote

30	237	30.2	245	1 TWMS72	transforming prote
31	236	30.1	239	1 S04742	fibroblast growth
32	235.5	30.0	202	1 TWMSHS	fibroblast growth
33	234.5	29.9	192	2 S54407	embryonic fibroblast
34	233	29.7	267	1 TVH0FS	fibroblast growth
35	216	27.5	208	2 S66486	fibroblast growth
36	216	27.5	208	2 A48137	fibroblast growth
37	210	26.8	211	2 JC7353	fibroblast growth
38	209.5	26.7	194	2 I48610	keratinocyte growth
39	208	26.5	208	2 JC7082	keratinocyte growth
40	207.5	26.4	194	1 A36301	fibroblast somatoc
41	207.5	26.4	194	2 S26049	fibroblast growth
42	207.5	26.4	194	2 S49501	keratinocyte growth
43	206.5	26.3	207	2 JC5940	fibroblast growth
44	205.5	26.2	207	2 JC5941	fibroblast growth
45	204	26.0	212	2 JC7511	fibroblast growth

ALIGNMENTS

RESULT 1
A32398
basic fibroblast growth factor precursor, 22.5K form - human
N:Alternate names: bFGF; fibroblast growth factor 2; prostatic growth factor; prostatic growth factor; basic fibroblast growth factor, 18K form
C:Species: Homo sapiens (man)
C>Date: 31-Jul-1989 #sequence_revision 31-Dec-1993 #text_change 21-Jul-2000
C:Accession: A32398; A61537; A26642; B32878; S00297; A54316; B54316; A33624; A25824; R:Prats, H.; Kaghad, M.; Prats, A.C.; Klagsbrun, M.; Leliass, J.M.; Lianzun, P.; Chalo Proc. Natl. Acad. Sci. U.S.A. 86, 1836-1840, 1989
A:Title: High molecular mass forms of basic fibroblast growth factor are initiated by A:Reference number: A32398; MUID:89184522
A:Accession: A32398
A:Molecule type: mRNA
A:Residues: 1-210 <PRA>
A:Cross-references: GB:J04513; NID:g183083; PIDN:AAA52531.1; PID:g459811
R:Shibata, F.; Baird, A.; Florjanczyk, R.Z.
Growth Factors 4, 277-287, 1991
A:Title: Functional characterization of the human basic fibroblast growth factor gene A:Reference number: A61537; MUID:92110035
A:Accession: A61537
A:Molecule type: DNA
A:Residues: 1-114 <SHI>
A:Note: authors translated the codon GGA for residue 47 as Ala
R:Kurokawa, T.; Sasada, R.; Iwane, M.; Igarashi, K.
FEBS Lett. 213, 189-194, 1987
A:Title: Cloning and expression of cDNA encoding human basic fibroblast growth factor A:Reference number: A26642; MUID:87162468
A:Accession: A26642
A:Molecule type: mRNA
A:Residues: 56-210 <KUR>
A:Cross-references: GB:M27968; NID:g182562; PIDN:AAA52448.1; PID:g182563
R:Abraham, J.A.; Whang, J.L.; Tumolo, A.; Mergia, A.; Piddes, J.C.
Cold Spring Harb. Symp. Quant. Biol. 51, 657-668, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence, genomic organization A:Reference number: A90924; MUID:87211066
A:Accession: B32878
A:Molecule type: mRNA
A:Residues: 56-210 <ABR>
A:Note: the authors translated the codon GAA for residue 108 as Gly
R:Abraham, J.A.; Whang, J.L.; Tumolo, A.; Mergia, A.; Friedman, J.; Gospodarowicz, D. EMBO J. 5, 2523-2528, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence and genomic organization A:Reference number: S00297; MUID:87055817
A:Accession: S00297
A:Status: not compared with conceptual translation
A:Molecule type: DNA
A:Residues: 1-155 <AB2>
A:Note: the authors translated the codon GAA for residue 108 as Gly
R:Shimoyama, Y.; Gotch, M.; Ino, Y.; Sakamoto, M.; Kato, K.; Hirohashi, S. Jpn. J. Cancer Res. 82, 1263-1270, 1991
A:Title: Characterization of high-molecular-mass forms of basic fibroblast growth fac

245
241
241
237

40UD:92091228

1-91,'X',93-95 <SH3>
hepatocellular carcinoma cell line
on NCBI backbone (NCBI:P:71595)

> <SH2>

on NCBI backbone (NCBI:P:71594)

J. Cell Biol. 109, 3105-3114, 1989

A:Title: Differential effects of heparin, fibronectin, and laminin on the phosphorylation

A:Reference number: A33624; MUID:90078343

A:Accession: A33624

A:Status: preliminary

A:Molecule type: protein

A:Residues: 57-210 <FEI>

R.Story, M.T.; Esch, F.; Shimasaki, S.; Sasse, J.; Jacobs, S.C.; Lawson, R.K.

Biochem. Biophys. Res. Commun. 142, 702-709, 1987

A:Title: Amino-terminal sequence of a large form of basic fibroblast growth factor isolate

A:Reference number: A25824; MUID:87156686

A:Accession: A25824

A:Molecule type: protein

A:Residues: 57-77 <STO>

A:Experimental source: prostate

R.Gimenez-Gallo, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.

Biochem. Biophys. Res. Commun. 135, 541-548, 1986

A:Title: Human brain-derived acidic and basic fibroblast growth factors: amino terminal

A:Reference number: A90122; MUID:86186784

A:Accession: B24243

A:Molecule type: protein

A:Residues: 65-102,'X',104-105 <GIN>

A:Experimental source: brain

R.Gautschi, P.; Frazer-Schroder, M.; Bohlen, P.

FEBS Lett. 204, 203-207, 1986

A:Title: Partial molecular characterization of endothelial cell mitogens from human brain

A:Reference number: A91364; MUID:86275260

A:Accession: B24301

A:Molecule type: protein

A:Residues: 65-88,'X',90-98,'X',100 <GAU>

R.Sommer, A.; Brewer, M.T.; Thompson, R.C.; Moscatelli, D.; Presta, M.; Rifkin, D.B.

Biochem. Biophys. Res. Commun. 144, 543-550, 1987

A:Title: A form of human basic fibroblast growth factor with an extended amino terminus-

A:Reference number: S42242; MUID:87213238

A:Accession: S42242

A:Status: preliminary

A:Molecule type: mRNA

A:Residues: 54-210 <SOM>

A:Cross-references: EMBL:M17599; NID:g183086; PIDN:AAA52534.1; PID:g183087

Pantoliano, M.W.; Horlick, R.A.; Springer, B.A.; Van Dyk, D.E.; Tobery, T.; Wetmore, D.

Biochemistry 33, 10229-10248, 1994

A:Title: Multivalent ligand-receptor binding interactions in the fibroblast growth factor

A:Reference number: A53784; MUID:94347757

A:Accession: B53784

A:Molecule type: protein

A:Residues: 54-71 <PAN>

R.Watson, R.; Anthony, F.; Pickett, M.; Lambden, P.; Masson, G.M.; Thomas, E.J.

Biochem. Biophys. Res. Commun. 187, 1227-1231, 1992

A:Title: Reverse transcription with nested polymerase chain reaction shows expression of

clients.

A:Reference number: I52267; MUID:93038590

A:Accession: I52267

A:Status: preliminary; translated from GB/EMBL/DBJ

A:Molecule type: mRNA

A:Residues: 93-182 <RES>

A:Cross-references: GB:S47380; NID:g256535; PIDN:AAAD13853.1; PID:g4261553

A:Experimental source: granulosa cells

R.Petry, V.; Buglier, B.; Amalric, F.; Prome, J.C.; Prats, H.

FEBS Lett. 349, 23-28, 1994

A:Title: Purification and characterization of the 210-amino acid recombinant basic fibro-

A:Accession: S46253
A:Molecule type: protein
A:Residues: 39-53;65-88 <PAR>
A:Note: recombinant gene expressed in Escherichia coli

C:Genetics:

A:Gene: GDB:FGF2, FGF2

A:Cross-references: GDB:119910; OMIM:134920

A:Map position: 4q25-4q27

A:Start codon: CTG

C:Superfamily: fibroblast growth factor

C:Keywords: alternative initiators; angiogenesis; growth factor; heparin binding; mit

F:1-210/Product: basic fibroblast growth factor, 22.5k form #status predicted <MA2>

F:65-210/Product: basic fibroblast growth factor, 18k form #status predicted <MA2>

F:82-86/Region: heparin binding #status predicted

F:171-174/Region: heparin binding #status predicted

Query Match 100.0%; Score 785; DB 2; Length 210;

Best Local Similarity 100.0%; Pred. No. 1.6e-70;

Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Oy 1 PALPEDGSGAFPPGHFKDPKRLCYCKNGFPLRIHPDGRVDGVREKSPHKLQIAEER 60

|||||

Db 65 PALPEDGSGAFPPGHFKDPKRLCYCKNGFPLRIHPDGRVDGVREKSPHKLQIAEER 124

Oy 61 GVSTIKGVCANRYLAMKEDGRLLASKCVTDCEFFERLESNNYTRSRKTTSTVALKR 120

|||||

Db 125 GVSTIKGVCANRYLAMKEDGRLLASKCVTDCEFFERLESNNYTRSRKTTSTVALKR 184

Oy 121 TGQYKLGSKTGPGOKAILFLPMSAKS 146

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

|||||

Db 185 TGQYKLGSKTGPGOKAILFLPMSAKS 210

Mol. Cell. Endocrinol. 49, 189-194, 1987
 A:Title: Isolation and partial characterization of basic fibroblast growth factor from h
 A:Reference number: A61551; MUID:87162856
 A:Accession: A61551
 A:Molecule type: protein
 A:Residues: 27-35, 'X', 37-41 <UE3>
 A:Experimental source: testes
 A:Note: This form appears to be identical to the renal form
 R:Ueno, N.; Baird, A.; Esch, F.; Shimasaki, S.; Ling, N.; Guillemin, R.
 Regul. Pept. 16, 135-145, 1986
 A:Title: Purification and partial characterization of a mitogenic factor from bovine liv
 A:Reference number: A60310; MUID:87119155
 A:Accession: A60310
 A:Molecule type: protein
 A:Residues: 23-35, 'X', 37-42 <UE>
 A:Experimental source: liver
 R:Ueno, N.; Baird, A.; Esch, F.; Ling, N.; Guillemin, R.
 Biochem. Biophys. Res. Commun. 138, 580-588, 1986
 A:Title: Isolation of an amino terminal extended form of basic fibroblast growth factor.
 A:Reference number: A24819; MUID:86295737
 A:Contents: annotation
 A:Note: the amino end of this form was blocked; the peptide composition matched what was
 R:Gospodarowicz, D.; Baird, A.; Cheng, J.; Lui, G.M.; Esch, F.; Bohlen, P.
 Endocrinology 118, 82-90, 1986
 A:Title: Isolation of fibroblast growth factor from bovine adrenal gland: physicochemica
 A:Reference number: A61094; MUID:86081530
 A:Accession: A61094
 A:Molecule type: protein
 A:Residues: 12-25, 27-35, 'X', 37-40 <GOS>
 A:Experimental source: adrenal gland
 R:Esch, F.; Baird, A.; Ling, N.; Ueno, N.; Hill, F.; Denoroy, L.; Klepper, R.; Gospodarc
 Proc. Natl. Acad. Sci. U.S.A. 82, 6507-6511, 1985
 A:Title: Primary structure of bovine pituitary basic fibroblast growth factor (FGF) and
 A:Reference number: A01386; MUID:86016731
 A:Accession: A01386
 A:Molecule type: protein
 A:Residues: 12-157 <ESC>
 A:Experimental source: pituitary gland
 R:Baird, A.; Esch, F.; Bohlen, P.; Ling, N.; Gospodarowicz, D.
 Regul. Pept. 12, 201-213, 1985
 A:Title: Isolation and partial characterization of an endothelial cell growth factor fro
 A:Reference number: A60316; MUID:86095426
 A:Accession: A60316
 A:Molecule type: protein
 A:Residues: 27-35, 'X', 37-43 <BAI>
 A:Experimental source: kidney
 R:Bohlen, P.; Baird, A.; Esch, F.; Ling, N.; Gospodarowicz, D.
 Proc. Natl. Acad. Sci. U.S.A. 81, 5364-5368, 1984
 A:Title: Isolation and partial molecular characterization of pituitary fibroblast growt
 A:Reference number: A22054; MUID:84298139
 A:Accession: A22054
 A:Molecule type: protein
 A:Residues: 12-26 <BOH>
 C:Comment: The acidic and basic fibroblast growth factors are the major endothelial-cell
 all types in vitro (although bFGF is 30-100 times more potent than aFGF in stimulating t
 C:Comment: This protein binds heparin more strongly than does aFGF.
 C:Keywords: fibroblast growth factor
 C:Superfamily: alternative splicing; angiogenesis; blocked amino end; growth factor; hepari
 F:1-157/Product: basic fibroblast growth factor, uterine form #status predicted <MAT>
 F:12-157/Product: basic fibroblast growth factor, pituitary gamma form #status experiment
 F:16-157/Product: basic fibroblast growth factor, pituitary alpha form #status experiment
 F:16-157/Product: basic fibroblast growth factor, pituitary short form #status predicted
 F:23-157/Product: basic fibroblast growth factor, hepatic form #status experimental <MAT
 F:27-157/Product: basic fibroblast growth factor, renal form #status experimental <MAT
 F:29-33, 118-121/Region: heparin binding #status predicted
 F:4/Modified site: blocked amino end (Ala) (in mature form pituitary gamma) (probably ac

Query Match 98.9%; Score 776; DB 1; Length 157;
 Best Local Similarity 98.6%; Pred. No. 9.3e-70;
 Matches 144; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

1 PALPEDGSGAAPPFGHFKDPKRLKCKNGGFLRIHPDGRVDSVREKSDPHIKLOQAER 60

|||||
 Db 12 PALPEDGSGAAPPFGHFKDPKRLKCKNGGFLRIHPDGRVDSVREKSDPHIKLOQAER 71
 61 GVSITKGCANRYLAMKEGRLASKCYTDECFEERLESNNYNTYRSKRTYSWYALKR 120
 |||||||
 Db 72 GVSITKGCANRYLAMKEGRLASKCYTDECFEERLESNNYNTYRSKRTYSWYALKR 131
 121 TGQYKLGSKTGPGRKAILFLPMSAKS 146
 |||||||
 Db 132 TGQYKLGSKTGPGRKAILFLPMSAKS 157
 |||||||
 RESULT 3
 S00185
 basic fibroblast growth factor - sheep
 N:Alternate names: prostatiopin
 C:Species: Ovis orientalis aries, Ovis ammon aries (domestic sheep)
 C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
 C:Accession: S00185
 R:Simpson, R.J.; Moritz, R.L.; Lloyd, C.J.; Fabri, L.J.; Nice, E.C.; Rubira, M.R.; Bu
 FEBS Lett. 224, 128-132, 1987
 A:Title: Primary structure of ovine pituitary basic fibroblast growth factor.
 A:Reference number: S00185; MUID:86035577
 A:Accession: S00185
 A:Molecule type: protein
 A:Residues: 1-146 <SIM>
 C:Superfamily: fibroblast growth factor
 C:Keywords: growth factor; heparin binding; mitogen
 F:18-22/Region: heparin binding #status predicted
 F:107-110/Region: heparin binding #status predicted
 Query Match 98.1%; Score 770; DB 1; Length 146;
 Best Local Similarity 97.9%; Pred. No. 3.4e-69;
 Matches 143; Conservative 1; Mismatches 2; Indels 0; Gaps 0;
 1 PALPEDGSGAAPPFGHFKDPKRLKCKNGGFLRIHPDGRVDSVREKSDPHIKLOQAER 60
 |||||||
 Db 1 PALPEDGSGAAPPFGHFKDPKRLKCKNGGFLRIHPDGRVDSVREKSDPHIKLOQAER 60
 61 GVSITKGCANRYLAMKEGRLASKCYTDECFEERLESNNYNTYRSKRTYSWYALKR 120
 |||||||
 Db 61 GVSITKGCANRYLAMKEGRLASKCYTDECFEERLESNNYNTYRSKRTYSWYALKR 120
 61 GVSITKGCANRYLAMKEGRLASKCYTDECFEERLESNNYNTYRSKRTYSWYALKR 120
 |||||||
 Db 61 GVSITKGCANRYLAMKEGRLASKCYTDECFEERLESNNYNTYRSKRTYSWYALKR 120
 121 TGQYKLGSKTGPGRKAILFLPMSAKS 146
 |||||||
 Db 121 TGQYKLGSKTGPGRKAILFLPMSAKS 146
 |||||||
 RESULT 4
 A31674
 basic fibroblast growth factor precursor - rat
 N:Alternate names: bFGF
 C:Species: Rattus norvegicus (Norway rat)
 C:Date: 21-May-1990 #sequence_revision 21-May-1990 #text_change 16-Jul-1999
 C:Accession: A31674; S00876; S24309
 R:Shimasaki, S.; Emoto, N.; Koba, A.; Mercado, M.; Shibata, F.; Cooksey, K.; Baird, A
 Biochem. Biophys. Res. Commun. 157, 256-263, 1988
 A:Title: Complementary DNA cloning and sequencing of rat ovarian basic fibroblast gro
 A:Reference number: A31674; MUID:89061721
 A:Accession: A31674
 A:Molecule type: mRNA
 A:Residues: 1-154 <SH>
 A:Cross-references: GB:M22427; NID:g204285; PIDN:AAA41210.1; PID:g204286
 R:Kurokawa, T.; Seno, M.; Igarashi, K.
 Nucleic Acids Res. 16, 5201, 1988
 A:Title: Nucleotide sequence of rat basic fibroblast growth factor cDNA.
 A:Reference number: S00876; MUID:88262516
 A:Accession: S00876
 A:Molecule type: mRNA
 A:Residues: 1-154 <KUR>
 A:Cross-references: EMBL:X07285; NID:g56203; PIDN:CAA30265.1; PID:g56204
 R:El-Husseini, A.E.D.; Paterson, J.A.; Myal, Y.; Shiu, R.P.C.

Biochim. Biophys. Acta 1131, 314-316, 1992
A:Title: PCR detection of the rat brain basic fibroblast growth factor (bFGF) mRNA cont
A:Reference number: S24309; MUID:92329546
A:Accession: S24309
A:Status: preliminary; translation not shown
A:Molecule type: mRNA
A:Residues: 35-154 <EHH>
A:Cross-references: EMBL:X61697; NID:g56143; PIDN:CAA43863.1; PID:g56144
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor
F:10-154/Product: basic fibroblast growth factor #status predicted <SIC>
F:10-154/Product: basic fibroblast growth factor #status predicted <MAT>

Query Match 97.0%; Score 761.5; DB 2; Length 154;
Best Local Similarity 97.3%; Pred. No. 2,5e-68;
Matches 142; Conservative 3; Mismatches 0; Indels 1; Gaps 1;
DB 1 PALPDDGSGAAPPFGHFKDPKRLCKNGGFLRIHPDGVNDGVREKSDPHIKLOLAER 60
10 PALPDDGSGAAPPFGHFKDPKRLCKNGGFLRIHPDGVNDGVREKSDPHIKLOLAER 68
QY 61 GVVSIKGCANRYLAMKEDGRLLASCVTDECFEERLESNNYNTYRSKYSWYVALKR 120
DB 69 GVVSIKGCANRYLAMKEDGRLLASCVTDECFEERLESNNYNTYRSKYSWYVALKR 128
QY 121 TGOYKLGSKTGPQKAILFLPMSAKS 146
DB 129 TGOYKLGSKTGPQKAILFLPMSAKS 154

RESULT 5
C37360
basic fibroblast growth factor - mouse
C:Species: Mus musculus (house mouse)
C:Date: 17-Apr-1993 #sequence_revision 17-Apr-1993 #text_change 16-Jul-1999
C:Accession: C37360
R:Hebert, J.M.; Basillco, C.; Goldfarb, M.; Haub, O.; Martin, G.R.
Dev. Biol. 138, 454-463, 1990
A:Title: Isolation of cDNAs encoding four mouse FGF family members and characterization
A:Reference number: A37360; MUID:90201563
A:Accession: C37360
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-154 <HEB>
A:Cross-references: GB:M30644; NID:g193296; PIDN:AAA37621.1; PID:g309239
C:Superfamily: fibroblast growth factor

Query Match 96.4%; Score 756.5; DB 2; Length 154;
Best Local Similarity 96.6%; Pred. No. 7.8e-68;
Matches 141; Conservative 4; Mismatches 0; Indels 1; Gaps 1;
DB 1 PALPDDGSGAAPPFGHFKDPKRLCKNGGFLRIHPDGVNDGVREKSDPHIKLOLAER 60
10 PALPDDGSGAAPPFGHFKDPKRLCKNGGFLRIHPDGVNDGVREKSDPHIKLOLAER 68
QY 61 GVVSIKGCANRYLAMKEDGRLLASCVTDECFEERLESNNYNTYRSKYSWYVALKR 120
DB 69 GVVSIKGCANRYLAMKEDGRLLASCVTDECFEERLESNNYNTYRSKYSWYVALKR 128
QY 121 TGOYKLGSKTGPQKAILFLPMSAKS 146
DB 129 TGOYKLGSKTGPQKAILFLPMSAKS 154

RESULT 6
I46711
fibroblast growth factor - rabbit (fragment)
C:Species: Oryctolagus cuniculus (domestic rabbit)
C:Date: 14-Feb-1997 #sequence_revision 14-Feb-1997 #text_change 16-Jul-1999
C:Accession: I46711
R:Winkles, J.A.; Friesel, R.; Alberts, G.F.; Janat, M.F.; Liu, G.

Am. J. Pathol. 143, 518-527, 1993
A:Title: Elevated expression of basic fibroblast growth factor in an immortalized rab
A:Reference number: I46711; MUID:93343209
A:Accession: I46711
A:Status: preliminary; translated from GB/EMBL/DBJ
A:Molecule type: mRNA
A:Residues: 1-137 <WIN>
A:Cross-references: GB:L12034; NID:g165014; PIDN:AAA31248.1; PID:g165015
C:Superfamily: fibroblast growth factor

Query Match 94.0%; Score 738; DB 2; Length 137;
Best Local Similarity 99.3%; Pred. No. 4.7e-66;
Matches 136; Conservative 1; Mismatches 0; Indels 0; Gaps 0;
DB 1 PALPDDGSGAAPPFGHFKDPKRLCKNGGFLRIHPDGVNDGVREKSDPHIKLOLAER 60
10 PALPDDGSGAAPPFGHFKDPKRLCKNGGFLRIHPDGVNDGVREKSDPHIKLOLAER 68
QY 61 GVVSIKGCANRYLAMKEDGRLLASCVTDECFEERLESNNYNTYRSKYSWYVALKR 120
DB 69 GVVSIKGCANRYLAMKEDGRLLASCVTDECFEERLESNNYNTYRSKYSWYVALKR 128
QY 121 TGOYKLGSKTGPQKAI 137
DB 121 TGOYKLGSKTGPQKAI 137

RESULT 7
A48834
basic fibroblast growth factor - chicken
C:Species: Gallus gallus (chicken)
C:Date: 01-Dec-1993 #sequence_revision 18-Nov-1994 #text_change 16-Jul-1999
C:Accession: A48834; S23636
R:Borja, A.Z.; Meijers, C.; Zeller, R.
Dev. Biol. 157, 110-118, 1993
A:Title: Expression of alternatively spliced bFGF first coding exons and antisense mR
A:Reference number: A48834; MUID:93246053
A:Accession: A48834
A:Status: preliminary
A:Molecule type: nucleic acid
A:Residues: 1-189 <BOR>
A:Experimental source: embryo
A:Note: sequence extracted from NCBI backbone (NCBIN:131000, NCBI:P:131001)
R:Mitrani, E.; Gruenbaum, Y.; Shohat, H.; Ziv, T.
Development 109, 387-393, 1990
A:Title: Fibroblast growth factor during mesoderm induction in the early chick embryo
A:Reference number: S23636; MUID:90382254
A:Accession: S23636
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 95-128 <MIT>
A:Cross-references: EMBL:X56804; NID:g62855; PIDN:CAA40139.1; PID:g62856
C:Superfamily: fibroblast growth factor

Query Match 92.1%; Score 723; DB 2; Length 189;
Best Local Similarity 91.8%; Pred. No. 2.1e-64;
Matches 134; Conservative 5; Mismatches 7; Indels 0; Gaps 0;
DB 1 PALPDDGSGAAPPFGHFKDPKRLCKNGGFLRIHPDGVNDGVREKSDPHIKLOLAER 60
10 PALPDDGSGAAPPFGHFKDPKRLCKNGGFLRIHPDGVNDGVREKSDPHIKLOLAER 103
QY 44 PALPDDGSGAAPPFGHFKDPKRLCKNGGFLRIHPDGVNDGVREKSDPHIKLOLAER 103
DB 61 GVVSIKGCANRYLAMKEDGRLLASCVTDECFEERLESNNYNTYRSKYSWYVALKR 120
QY 104 GVVSIKGCANRYLAMKEDGRLLALCATEDECFEERLESNNYNTYRSKYSWYVALKR 163
DB 121 TGOYKLGSKTGPQKAILFLPMSAKS 146
QY 164 TGOYKLGSKTGPQKAILFLPMSAKS 189


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RESULT 12
A33665
acidic fibroblast growth factor 1 precursor [validated] - human
M:Alternate names: beta-ECGF; endothelial cell growth factor beta; heparin-binding growth
C:Species: Homo sapiens (man)
C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 08-Dec-2000
C:Accession: A33665; A32316; S18217; A43804; A24662; JH0707; S35535; S35536; I39413; A23
R:Mejia, A.; Fischer, E.; Graves, D.; Tunnolo, A.; Miller, J.; Gospodarowicz, D.; Abrahm
Biochem. Biophys. Res. Commun. 164, 1121-1129, 1989
A:Title: Structural analysis of the gene for human acidic fibroblast growth factor.
A:Reference number: A33665; MUID:90073637
A:Accession: A33665
A:Molecule type: DNA
A:Residues: 1-155 <MER>
A:Cross-references: GB:M30491
R:Wang, W.P.; Lehtoma, K.; Varban, M.L.; Krishnan, I.; Chiu, I.M.
Mol. Cell. Biol. 9, 2387-2395, 1989
A:Title: Cloning of the gene coding for human class 1 heparin-binding growth factor and
A:Reference number: A32316; MUID:89343957
A:Accession: A32316
A:Molecule type: DNA
A:Residues: 1-155 <MAN>
A:Cross-references: GB:M23087; NID:9183875; PIDN:AAA52638.1; PID:9386768
R:Wang, W.P.; Quick, D.; Balcerzak, S.P.; Needleman, S.W.; Chiu, I.M.
Oncogene 6, 1521-1529, 1991
A:Title: Cloning and sequence analysis of the human acidic fibroblast growth factor gene
A:Reference number: S18217; MUID:92019819
A:Accession: S18217
A:Molecule type: DNA
A:Residues: 1-155 <MA2>
A:Cross-references: EMBL:M23086
R:Chiu, I.M.; Wang, W.P.; Lehtoma, K.
Oncogene 5, 755-762, 1990
A:Title: Alternative splicing generates two forms of mRNA coding for human heparin-bindi
A:Reference number: A43804; MUID:90265618
A:Accession: A43804
A:Molecule type: mRNA
A:Residues: 1-155 <CHT>
A:Cross-references: EMBL:X51943; NID:932435; PIDN:CAA36206.1; PID:932436
R:Jaye, M.; Hawk, R.; Burgess, W.; Ricca, G.A.; Chiu, I.M.; Ravera, M.W.; O'Brien, S.J.;
Science 233, 541-545, 1986
A:Title: Human endothelial cell growth factor: cloning, nucleotide sequence, and chromos
A:Reference number: A24662; MUID:86261805
A:Accession: A24662
A:Molecule type: mRNA
A:Residues: 1-155 <JAY>
A:Cross-references: GB:M13361; NID:9181941; PIDN:AAA79245.1; PID:9181942
R:Yiu, Y.L.; Kna, H.; Golden, J.A.; Mischak, H.; Goetzl, E.J.; Turck, C.W.
J. Exp. Med. 175, 1073-1080, 1992
A:Title: An acidic fibroblast growth factor protein generated by alternate splicing acts
A:Reference number: JH0707; MUID:92202857
A:Accession: JH0707
A:Molecule type: mRNA
A:Residues: 1-155 <YU>
A:Cross-references: GB:X65778; NID:9396163; PIDN:CAA46661.1; PID:9396164
R:Payson, R.A.; Canatan, H.; Chotani, M.A.; Wang, W.P.; Harris, S.E.; Myers, R.L.; Chiu,
Nucleic Acids Res. 21, 489-495, 1993
A:Title: Cloning of two novel forms of human acidic fibroblast growth factor (aFGF) mRNA
A:Reference number: S35535; MUID:93181239
A:Accession: S35535
A:Status: translation not shown
A:Molecule type: mRNA
A:Residues: 1-58 <PAY>
A:Cross-references: GB:L01485
A:Accession: S35536
A:Status: translation not shown
A:Molecule type: mRNA
A:Residues: 1-58 <PA2>
A:Cross-references: GB:L01487
R:Crumley, G.; Dionne, C.A.; Jaye, M.
Biochem. Biophys. Res. Commun. 171, 7-13, 1990

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A:Title: The gene for human acidic fibroblast growth factor encodes two upstream exon
A:Reference number: I39412; MUID:90365758
A:Accession: I39413
A:Status: translation not shown
A:Molecule type: mRNA
A:Residues: 1-40 <RES>
A:Cross-references: GB:M60515; NID:9178226; PIDN:AAA51672.1; PID:9553170; GB:M60516;
R:Harper, J.W.; Strickland, D.J.; Lobb, R.R.
Biochemistry 25, 4097-4103, 1986
A:Reference number: A23553; MUID:86296647
A:Accession: A23553
A:Molecule type: protein
A:Residues: 16-155 <HAN>
R:Gienez-Gallego, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.
Biochem. Biophys. Res. Commun. 138, 611-617, 1986
A:Title: The complete amino acid sequence of human brain-derived acidic fibroblast gr
A:Reference number: A24820; MUID:86595741
A:Accession: A24820
A:Molecule type: protein
A:Residues: 16-155 <GIM>
R:Gienez-Gallego, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.
Biochem. Biophys. Res. Commun. 135, 541-548, 1986
A:Title: Human brain-derived acidic and basic fibroblast growth factors: amino termin
A:Reference number: A30122; MUID:86186784
A:Accession: A24243
A:Molecule type: protein
A:Residues: 16-47 <G12>
A:Experimental source: brain
R:Gautschi, P.; Frater-Schroder, M.; Bohlen, P.
FEBS Lett. 204, 203-207, 1986
A:Title: Partial molecular characterization of endothelial cell mitogens from human b
A:Reference number: A91364; MUID:86275260
A:Accession: A24301
A:Molecule type: protein
A:Residues: 16-30, 'X', 32-49 <GAU>
R:Gautschi-Sova, P.; Muller, T.; Bohlen, P.
Biochem. Biophys. Res. Commun. 140, 874-880, 1986
A:Title: Amino acid sequence of human acidic fibroblast growth factor.
A:Reference number: A26386; MUID:87048871
A:Accession: A26386
A:Molecule type: protein
A:Residues: 16-155 <GA2>
A:Experimental source: brain
R:Chavan, A.J.; Haley, B.E.; Volkin, D.B.; Marfia, K.E.; Verticelli, A.M.; Bruner, M.
Biochemistry 33, 7193-7202, 1994
A:Title: Interaction of nucleotides with acidic fibroblast growth factor (FGF-1).
A:Reference number: A53639; MUID:94271773
A:Accession: A53639
A:Molecule type: protein
A:Residues: 16-30, 'X', 32-38, 73-75, 'X', 77-97, 'X', 99-101, 128-131, 'X', 133-140, 'X', 142-15
C:Genetics:
A:Gene: GDB:FGF1; FGFA
A:Cross-references: GDB:119909; OMIM:131220
A:Map position: 5q31.3-5q33.2
A:Introns: 57/1; 91/3
C:Superfamily: fibroblast growth factor
C:Keywords: alternative splicing; growth factor; heparin binding
F:16-155/Product: fibroblast growth factor 1 #status experimental <MAT>
F:129/Binding site: carbohydrate (Asn) (covalent) #status absent

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Query Match 49.2%; Score 386; DB 1; Length 155;
Best Local Similarity 55.9%; Pred. No. 4.8e-31;
Matches 76; Conservative 16; Mismatches 42; Indels 2; Gaps 1;

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QY 13 PGHFRDPRKLYCKNGGFLRTHPDGRVGVKESDPHIKLOLAEEGVSIKGVCANR 72
    |||::||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
DB 19 PPGNTKKPKLLTCSNGGFLRLPDGYDGTDRSDQHLQDLSBSGEVYIKSTETGQ 78
    ||| ||| ||| :||| ||| ||| ||| ||| ||| ||| ||| ||| |||
QY 73 YLAMEDEGRLLASKCVTECFEEFRLSNNTYRSRKYT--SWYVALKRTGQYKLSKT 130
    ||| ||| ||| :||| ||| ||| ||| ||| ||| ||| ||| ||| |||
DB 79 YLAMTDGILLYGSQTPNEECFLERLEENHYNTYISKHAENWVGLKKNSCKRGPRPT 138
    ||| ||| ||| :||| ||| ||| ||| ||| ||| ||| ||| ||| |||

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1
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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:46:42 ; Search time 23.13 seconds

(without alignments)
244,404 Million cell updates/sec

Title: US-09-802-365-4

Perfect score: 785
Sequence: 1 PALPEDGSGGAPPPGHFKDP.....GSKTGPQKALFLPMSAKS 146

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 105224 seqs, 38719550 residues

Total number of hits satisfying chosen parameters: 105224

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Database : SwissProt_40:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Length	ID	Description
1	785	100.0	155 1	EGF2_HUMAN P09038 homo sapien
2	776	98.9	155 1	EGF2_BCVIN P03969 bos taurus
3	770	98.1	155 1	EGF2_SHEEP P20003 ovis aries
4	761.5	97.0	154 1	EGF2_RAT P13109 rattus norv
5	756.5	96.4	154 1	EGF2_MOUSE P1655 mus musculu
6	738	94.0	137 1	EGF2_RABIT P48799 oryctolagus
7	723	92.1	158 1	EGF2_CHICK P48800 gallus gall
8	719.5	91.7	156 1	EGF2_MONDO P48798 monodelphis
9	646	82.3	155 1	EGF1_MESAU P34004 mesocricetu
10	396	50.4	155 1	EGF1_HUMAN P05230 homo sapien
11	386	49.2	155 1	EGF1_HUMAN P19356 gallus gall
12	383.5	48.9	155 1	EGF1_CHICK P19356 gallus gall
13	382	48.7	155 1	EGF1_MOUSE P19356 mus musculu
14	380	48.4	152 1	EGF1_PIG P20002 sus scrofa
15	375	47.8	155 1	EGF1_BOVIN P03968 bos taurus
16	255	32.5	194 1	EGF4_CHICK P48804 gallus gall
17	252.5	32.2	256 1	EGF6_MOUSE P21658 mus musculu
18	250	31.8	208 1	EGF6_MOUSE P17677 homo sapien
19	249	31.7	208 1	EGF6_HUMAN P08620 homo sapien
20	248.5	31.7	206 1	EGF4_HUMAN P08620 homo sapien
21	248	31.6	220 1	EGF3_CHICK P48801 gallus gall
22	246.5	31.4	206 1	EGF4_BOVIN P48803 bos taurus
23	241.5	30.8	264 1	EGF5_MOUSE P15656 mus musculu
24	241.5	30.8	266 1	EGF5_RAT P48807 rattus norv
25	239	30.4	187 1	EGF3_XENLA P48805 xenopus lae
26	237.5	30.3	237 1	EGF3_XENLA P36386 xenopus lae
27	237	30.2	245 1	EGF3_MOUSE P05524 mus musculu
28	236.5	30.1	239 1	EGF3_HUMAN P11487 homo sapien
29	230.0	30.0	192 1	EGF4_MOUSE P41403 mus musculu
30	229.9	29.9	192 1	EGF4_XENLA P48806 xenopus lae
31	229.7	29.7	268 1	EGF5_HUMAN P12034 homo sapien
32	228.5	29.5	268 1	EGF5_HUMAN P31371 homo sapien
33	228.5	29.5	208 1	EGF9_MOUSE P54130 mus musculu

34	216	27.5	208 1	EGF9_RAT P36364 rattus norv
35	212.5	27.1	209 1	EGF9_XENLA O91875 xenopus lae
36	210.5	26.8	194 1	EGF7_CANFA P79150 canis famli
37	210	26.8	211 1	EGF7_HUMAN O9np95 homo sapien
38	209.5	26.7	194 1	EGF7_MOUSE P36363 mus musculu
39	207.5	26.4	194 1	EGF7_HUMAN P21781 homo sapien
40	207.5	26.4	194 1	EGF7_SHEEP O54769 rattus norv
41	206.5	26.3	207 1	EGF7_RAT O43320 homo sapien
42	205.5	26.2	207 1	EGF7_HUMAN O9n198 homo sapien
43	204.5	26.1	194 1	EGF7_PIG O15520 sus scrofa
44	203	25.9	208 1	EGF8_HUMAN O15520 homo sapien
45	203	25.9	215 1	EGF8_RAT P70492 rattus norv

ALIGNMENTS

RESULT ID	EGF2_HUMAN	STANDARD	PRT: 155 AA.
AC	P09038:		
DT	01-NOV-1988 (Rel. 09, Created)		
DT	01-NOV-1988 (Rel. 09, Last sequence update)		
DT	01-MAR-2002 (Rel. 41, Last annotation update)		
DE	Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast growth factor) (BFGF) (Prostatropin).		
DE	EGF2 OR EGF8.		
GN	Homo sapiens (Human).		
OS	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Homiidae; Homo.		
OX	NCBI_TaxID=9606;		
RN	[1]		
RP	SEQUENCE FROM N.A.		
RX	MEDLINE=87053817; PubMed=3780670;		
RA	Abraham J.A., Whang J.L., Tumolo A., Mergia A., Friedman J., Gospodarowicz D., Fiddes J.C.;		
RT	"Human basic fibroblast growth factor: nucleotide sequence and genomic organization.";		
RT	EMBO J. 5:2523-2528(1986).		
RN	[2]		
RP	SEQUENCE FROM N.A.		
RX	MEDLINE=87217066; PubMed=3472745;		
RA	Abraham J.A., Whang J.L., Tumolo A., Mergia A., Fiddes J.C.;		
RT	"Human basic fibroblast growth factor: nucleotide sequence, genomic organization, and expression in mammalian cells.";		
RT	Cold Spring Harb. Symp. Quant. Biol. 51:657-668(1986).		
RN	[3]		
RP	SEQUENCE FROM N.A.		
RX	MEDLINE=87213238; PubMed=3579930;		
RA	Sommer A., Brewer M.T., Thompson R.C., Moscattelli D., Presta M., Rifkin D.B.;		
RT	"A form of human basic fibroblast growth factor with an extended amino terminus.";		
RT	Biochem. Biophys. Res. Commun. 144:543-550(1987).		
RN	[4]		
RP	SEQUENCE FROM N.A.		
RX	MEDLINE=87162468; PubMed=2435575;		
RA	Kurokawa T., Sasada R., Iwane M., Igarashi K.;		
RT	"Cloning and expression of cDNA encoding human basic fibroblast growth factor.";		
RT	FEBS Lett. 213:189-194(1987).		
RN	[5]		
RP	SEQUENCE FROM N.A.		
RX	MEDLINE=89184522; PubMed=2538817;		
RA	Prats H., Kaghaz M., Prats A.C., Klagsbrun M., Lelias J.M., Llanzun P., Chalou P., Tauber J.P., Amalric F., Smith J.A., Caput D.;		
RT	"High molecular mass forms of basic fibroblast growth factor are initiated by alternative CUG codons.";		
RT	Proc. Natl. Acad. Sci. U.S.A. 86:1836-1840(1989).		
RN	[6]		
RP	SEQUENCE OF 10-35.		
RX	MEDLINE=86275260; PubMed=3732516;		

der M., Boehlen P.;
erization of endothelial cell mitogens from
sic fibroblast growth factors.";

64259;
Hatcher V.B., Thomas K.A.;
and basic fibroblast growth factors:
specific mitogenic activities.";
n. 135:541-548(1986).

Story M.T., Esch F., Shimazaki S., Sasse J., Jacobs S.C., Lawson R.K.;
"Amino-terminal sequence of a large form of basic fibroblast growth
factor isolated from human benign prostatic hyperplastic tissue.";
Biochem. Biophys. Res. Commun. 142:702-709(1987).

[9]
X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS).
MEDLINE=91195367; PubMed=1707542;
Eriksson A.E., Cousens L.S., Weaver L.H., Matthews B.W.;
"Three-dimensional structure of human basic fibroblast growth
factor.";
Proc. Natl. Acad. Sci. U.S.A. 88:3441-3445(1991).

[10]
X-RAY CRYSTALLOGRAPHY (1.6 ANGSTROMS).
MEDLINE=94004464; PubMed=7691311;
Eriksson A.E., Cousens L.S., Matthews B.W.;
"Refinement of the structure of human basic fibroblast growth
factor at 1.6-A resolution and analysis of presumed heparin binding sites by
selenate substitution.";
Protein Sci. 2:1274-1284(1993).

[11]
X-RAY CRYSTALLOGRAPHY (1.8 ANGSTROMS).
MEDLINE=91195368; PubMed=1849658;
Zhang J., Cousens L.S., Barr P.J., Sprang S.R.;
"Three-dimensional structure of human basic fibroblast growth factor,
a structural homolog of interleukin 1 beta.";
Proc. Natl. Acad. Sci. U.S.A. 88:3446-3451(1991).

[12]
X-RAY CRYSTALLOGRAPHY (1.6 ANGSTROMS).
MEDLINE=92121151; PubMed=1769963;
Ago H., Kitagawa Y., Fujishima A., Matsuura Y., Katsube Y.;
"Crystal structure of basic fibroblast growth factor at 1.6-A
resolution.";
J. Biochem. 110:360-363(1991).

[13]
X-RAY CRYSTALLOGRAPHY (2.8 ANGSTROMS).
MEDLINE=91095983; PubMed=1702556;
Zhu X., Komiya H., Chirino A., Faham S., Fox G.M., Arakawa T.,
Hsu B.T., Rees D.C.;
"Three-dimensional structures of acidic and basic fibroblast growth
factors.";
Science 251:90-93(1991).

[14]
STRUCTURE BY NMR.
MEDLINE=97040521; PubMed=8885834;
Moy F.J., Seddon A.P., Boehlen P., Powers R.;
"High-resolution solution structure of basic fibroblast growth factor
determined by multidimensional heteronuclear magnetic resonance
spectroscopy.";
Biochemistry 35:13552-13561(1996).

-1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CONCENTRATION OF THESE 2 GROWTH FACTORS.

-1- SUBUNIT: MONOMER.

-1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
AFGF.

-1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.

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DR EMBL; M17599; AAS2534.1; ALT_INIT.
DR EMBL; X04431; CAA28027.1;
DR EMBL; X04432; CAA28028.1;
DR EMBL; X04433; CAA28029.1;
DR EMBL; M27968; AAS2448.1;
DR EMBL; J04513; AAS2533.1; ALT_INIT.
DR PIR; A25824; A25824.
DR PIR; A26642; A26642.
DR PIR; B24243; B24243.
DR PIR; B24301; B24301.
DR PIR; B32878; B32878.
DR PIR; S00297; S00297.
DR PDB; 2RGE; 15-APR-92.
DR PDB; 4EGF; 15-JUL-93.
DR PDB; 1FGA; 15-JUL-93.
DR PDB; 1BFB; 03-APR-96.
DR PDB; 1BFC; 03-APR-96.
DR PDB; 1BFF; 16-JUN-97.
DR PDB; 1BFG; 31-JAN-94.
DR PDB; 2BPH; 30-APR-94.
DR PDB; 1BLA; 08-NOV-96.
DR PDB; 1BLD; 08-NOV-96.
DR MIM; 134920;
DR InterPro; IPR002209; HGF_FGF.
DR InterPro; IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; ILL_HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
KW 3D-structure.
FT PROPEP 1 9
FT CHAIN 10 155
FT SITE 46 48
FT SITE 88 90
FT BINDING 27 31
FT BINDING 116 119
FT STRAND 30 34
FT STRAND 35 38
FT STRAND 39 43
FT STRAND 45 46
FT STRAND 49 52
FT TURN 55 56
FT TURN 58 60
FT STRAND 62 66
FT TURN 69 70
FT STRAND 71 76
FT TURN 77 80
FT STRAND 81 85
FT TURN 87 88
FT STRAND 91 94
FT STRAND 99 101
FT STRAND 103 107
FT TURN 109 110
FT STRAND 113 117
FT TURN 121 122
FT STRAND 124 124
FT STRAND 127 127
FT TURN 129 130
FT STRAND 132 133
FT TURN 136 138
FT HELIX 141 142
FT HELIX 144 146
FT STRAND 148 152
SQ SEQUENCE 155 AA; 17254 MW; BE6CE1373007129 CRC64;

Query Match 100.0%; Score 785; DB 1; Length 155;
 Best Local Similarity 100.0%; Pred. No. 1.5e-75;
 Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PALPEDGSGAAPPGEHKDPKRLCYCKNGFPLRLHPDGRVDGVREKSDPHIKLOQAER 60
 |||||||
 DB 10 PALPEDGSGAAPPGEHKDPKRLCYCKNGFPLRLHPDGRVDGVREKSDPHIKLOQAER 69
 |||||||

OY 61 GVSIRKGCARRYLAMKEDGRSLASKCTDCEFFERLESNNYTRSRKYSWYALKR 120
 |||||||
 DB 70 GVSIRKGCARRYLAMKEDGRSLASKCTDCEFFERLESNNYTRSRKYSWYALKR 129
 |||||||

OY 121 TGOYKLSKTPGOKAILFLPMSAKS 146
 |||||||
 DB 130 TGOYKLSKTPGOKAILFLPMSAKS 155
 |||||||

RESULT 2
 FGF2_BOVIN
 ID FGF2_BOVIN STANDARD; PRT; 155 AA.
 AC P03969;
 DT 23-OCT-1986 (Rel. 02, Created)
 DT 23-OCT-1986 (Rel. 02, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast growth factor) (BFGF) (Prostatiotin) [contains: Kidney-derived growth factor].
 DE FGF2 OR FGF-2.
 OS Bos taurus (Bovine).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae; Bovidae; Bovinae; Bos.
 OC NCBI_TaxID:9913;
 RN [1]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=86261806; PubMed=2425435;
 RA Abraham J.A., Mergia A., Whang J.L., Tumolo A., Friedman J., Hjertild K.A., Gospodarowicz D., Fiddes J.C.;
 RT "Nucleotide sequence of a bovine clone encoding the angiogenic protein, basic fibroblast growth factor.";
 RL Science 233:545-548(1986).
 RN [2]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=87217066; PubMed=3472745;
 RA Abraham J.A., Whang J.L., Tumolo A., Mergia A., Fiddes J.C.;
 RT "Human basic fibroblast growth factor: nucleotide sequence, genomic organization, and expression in mammalian cells.";
 RL Cold Spring Harb. Symp. Quant. Biol. 51:657-668(1986).
 RN [3]
 RP SEQUENCE OF 10-155.
 RX MEDLINE=86016731; PubMed=3863109;
 RA Esch F., Baird A., Ling N., Ueno N., Hill F., Denoroy L., Klepper R., Gospodarowicz D., Boehlen P., Guillemin R.;
 RT "Primary structure of bovine pituitary basic fibroblast growth factor (bFGF) and comparison with the amino-terminal sequence of bovine brain acidic FGF.";
 RL Proc. Natl. Acad. Sci. U.S.A. 82:6507-6511(1985).
 RN [4]
 RP SEQUENCE OF 1-9.
 RX MEDLINE=86295737; PubMed=3741423;
 RA Ueno N., Baird A., Esch F., Ling N., Guillemin R.;
 RT "Isolation of an amino terminal extended form of basic fibroblast growth factor.";
 RL Biochem. Biophys. Res. Commun. 138:580-588(1986).
 RN [5]
 RP SEQUENCE OF 25-41.
 RX MEDLINE=86095426; PubMed=4081126;
 RA Baird A., Esch F., Boehlen P., Ling N., Gospodarowicz D.;
 RT "Isolation and partial characterization of an endothelial cell growth factor from the bovine kidney: homology with basic fibroblast growth factor.";

RL Regul. Pept. 12:201-213(1985).
 RN [6]
 RP SEQUENCE OF 21-40.
 RC TISSUE-Kidney;
 RX MEDLINE=87119165; PubMed=3809608;
 RA Ueno N., Baird A., Esch F., Shimasaki S., Ling N., Guillemin R.;
 RT "Purification and partial characterization of a mitogenic factor from bovine liver: structural homology with basic fibroblast growth factor.";
 RL Regul. Pept. 16:135-145(1986).
 RN [7]
 RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).
 RX MEDLINE=91095983; PubMed=1702556;
 RA Zhu X., Komiya H., Chirino A., Faham S., Fox G.M., Arakawa T., Hsu B.T., Rees D.C.;
 RT "Three-dimensional structures of acidic and basic fibroblast growth factors.";
 RL Science 251:90-93(1991).
 CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -1- SUBUNIT: MONOMER.
 CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES AFGF.
 CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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 CC -----
 CC EMBL: M13440; AAA30518.1; ..
 DR PIR: A24663; GKB0B.
 DR PIR: A24819; A24819.
 DR PIR: A32878; A32878.
 DR PDB: 1BAS; 3i-OCT-93.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; IIL_HBGF.
 DR Pfam: PF00167; FGF; 1.
 DR PRINTS: PR00262; IILHBGF.
 DR PRODOM: PD000831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
 KW 3D-structure.
 FT PROPEP 1 9
 FT CHAIN 10 155
 FT CHAIN 25 155
 FT SITE 46 48
 FT SITE 88 90
 FT BINDING 27 31
 FT BINDING 116 119
 FT STRAND 30 34
 FT STRAND 35 38
 FT STRAND 39 43
 FT STRAND 45 46
 FT STRAND 49 52
 FT TURN 55 56
 FT TURN 58 60
 FT STRAND 62 68
 FT TURN 69 70
 FT STRAND 71 76
 FT TURN 77 80
 FT STRAND 81 85
 FT TURN 87 88
 FT STRAND 91 94
 FT STRAND 99 101
 FT HELIX 103 107
 FT STRAND 109 110
 FT TURN

HEPARIN-BINDING GROWTH FACTOR 2.
 KIDNEY-DERIVED GROWTH FACTOR.
 CELL ATTACHMENT SITE (POTENTIAL).
 CELL ATTACHMENT SITE (POTENTIAL).
 HEPARIN (POTENTIAL).
 HEPARIN (POTENTIAL).

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FT STRAND 113 117
FT TURN 121 122
FT STRAND 124 124
FT STRAND 127 127
FT TURN 129 130
FT STRAND 133 133
FT HELIX 136 138
FT TURN 141 142
FT HELIX 144 146
FT STRAND 148 151
SQ SEQUENCE 155 AA; 17250 MM; BE6CE70FA6107129 CRC64;

Query Match 98.9%; Score 776; DB 1; Length 155;
Best Local Similarity 98.6%; Pred. No. 1.3e-74;
Matches 144; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 1 PALPEDGSSGAFPPGHEFDKPKRLCKNGGFFLRHPDGRVGVGRKSPDHKLQQAER 60
DB 10 PALPEDGSSGAFPPGHEFDKPKRLCKNGGFFLRHPDGRVGVGRKSPDHKLQQAER 69
QY 61 GVSSTKGVCANRYLAMKEDGRLASKCVTDCFFPERLESNNYNTYRSRKYTSWYALKR 120
DB 70 GVSSTKGVCANRYLAMKEDGRLASKCVTDCFFPERLESNNYNTYRSRKYTSWYALKR 129
QY 121 TGQYKLGSKTGPQKAILFLPMSAKS 146
DB 130 TGQYKLGSKTGPQKAILFLPMSAKS 155

RESULT 3
FGF2_SHEEP STANDARD; PRT; 155 AA.
ID FGF2_SHEEP AC P20003;
DT 01-FEB-1991 (Rel. 17, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (BFGF) (Prostatropin).
GN FGF2 OR FGF-2.
OS Ovis aries (sheep).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
OC Bovidae; Caprinae; Ovis.
OX NCBI_TaxID=9940;
RN [1]
RP SEQUENCE FROM N.A.
RA Sutton R., Ward W.G., Raphael K.A., Cam G.R.;
RL Submitted (SEP-1994) to the EMBL/GenBank/DBJ databases.
RN [2]
RP SEQUENCE OF 9-155.
RX MEDLINE=88055577; PubMed=3678486;
RA Simpson R.J., Moritz R.L., Lloyd C.J., Fabri L.J., Nice E.C.,
RA Rubira M.R., Burgess A.W.;
RT "Primary structure of ovine pituitary basic fibroblast growth
RT factor."
RL FEBS Lett. 224:128-132(1987).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC EMBL: L36136; AAA31519.1; -.
DR PIR: S00185; S00185.
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IL1HBGF.
DR PRODOM: PD000831; HBGF_FGF_1.
DR SMART: SM00442; HBGF_FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9
FT CHAIN 10 155
FT SITE 45 48
FT SITE 87 90
FT BINDING 27 31
FT BINDING 116 119
SQ SEQUENCE 155 AA; 17280 MM; B5F2364BA610606D CRC64;

Query Match 98.1%; Score 770; DB 1; Length 155;
Best Local Similarity 97.9%; Pred. No. 5.6e-74;
Matches 143; Conservative 1; Mismatches 2; Indels 0; Gaps 0;

QY 1 PALPEDGSSGAFPPGHEFDKPKRLCKNGGFFLRHPDGRVGVGRKSPDHKLQQAER 60
DB 10 PALPEDGSSGAFPPGHEFDKPKRLCKNGGFFLRHPDGRVGVGRKSPDHKLQQAER 69
QY 61 GVSSTKGVCANRYLAMKEDGRLASKCVTDCFFPERLESNNYNTYRSRKYTSWYALKR 120
DB 70 GVSSTKGVCANRYLAMKEDGRLASKCVTDCFFPERLESNNYNTYRSRKYTSWYALKR 129
QY 121 TGQYKLGSKTGPQKAILFLPMSAKS 146
DB 130 TGQYKLGSKTGPQKAILFLPMSAKS 155

RESULT 4
FGF2_RAT STANDARD; PRT; 154 AA.
ID FGF2_RAT AC P13109;
DT 01-JAN-1990 (Rel. 13, Created)
DT 01-JAN-1990 (Rel. 13, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (BFGF) (Prostatropin).
GN FGF2 OR FGF-2.
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX NCBI_TaxID=10116;
RN [1]
RP SEQUENCE FROM N.A.
RA STRAIN=SPRAGUE-DAWLEY; TISSUE=Ovary;
RX MEDLINE=89061721; PubMed=3196337;
RA Shimazaki S., Emoto N., Koda A., Mercado M., Shibata F.,
RA Cooksey K., Baird A., Ling N.;
RT "Complementary DNA cloning and sequencing of rat ovarian basic
RT fibroblast growth factor and tissue distribution study of its mRNA."
RL Biochem. Biophys. Res. Commun. 157:256-263(1988).
RN [2]
RP SEQUENCE FROM N.A.
RA TISSUE=Brain;
RX MEDLINE=88262516; PubMed=3387229;
RA Kurokawa T., Seno M., Igarashi K.;
RT "Nucleotide sequence of rat basic fibroblast growth factor cDNA."
RL Nucleic Acids Res. 16:5201-5201(1988).
RN [3]
RP SEQUENCE OF 1-28 FROM N.A.
RA STRAIN=SPRAGUE-DAWLEY; TISSUE=Testis;
RX MEDLINE=97200905; PubMed=9048734;
RA Pasumathil K.B.S., Jin Y., Cattini P.A.;
```


Db 129 TGOYKLGSKTGPQKALFLPMSAKS 154

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|||||
RESULT 6
ID FGF2_RABIT STANDARD; PRT; 137 AA.
AC P48799;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 (HBGF-2) (Basic fibroblast growth
factor) (HBGF) (Prostathropin) (Fragment).
GN FGF2.
OS Oryctolagus cuniculus (Rabbit).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
OX NCBI_TaxID=9986;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=NEW ZEALAND WHITE; TISSUE=Smooth muscle;
RX MEDLINE=93343209; Pubmed=6342599;
RA Winkles J.A., Friesel R., Alberts G.F., Janat M.F., Liu G.;
RT "Elevated expression of basic fibroblast growth factor in an
immortalized rabbit smooth muscle cell line."
RL Am. J. Pathol. 143:518-527(1993).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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or send an email to license@isb-sib.ch).
-----
DR EMBL: L12034; AAA31248.1; -.
DR HSSP: P09038; IBFF.
DR InterPro: IPR002209; HBGF_FGF.
DR Pfam: PF00167; FGF_1.
DR ProDom: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT BINDING 18 22 HEPARIN (POTENTIAL).
FT BINDING 107 110 HEPARIN (POTENTIAL).
FT NON_TER 137 137
SQ SEQUENCE 137 AA; 15418 MW; 0D9BE457B88BEC51 CRC64;
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Query Match 94.0%; Score 738; DB 1; Length 137;
Best Local Similarity 99.3%; Pred. No. 1.1e-70;
Matches 136; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

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QY 1 PALPDGSGGAPPGHFKPKRLYCKNGGFLRIHPDGVDCVREKSDPHIKLOAER 60
DB 1 PALPDGSGGAPPGHFKPKRLYCKNGGFLRIHPDGVDCVREKSDPHIKLOAER 60
QY 61 GVSSTKGVANRYLAKMEKEDGLASKCVDCEFFERLESNNYNTYRSKYSWYVALKR 120
DB 61 GVSSTKGVANRYLAKMEKEDGLASKCVDCEFFERLESNNYNTYRSKYSWYVALKR 120
QY 121 TGOYKLGSKTGPQKAI 137
DB 121 TGOYKLGSKTGPQKAI 137
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```
RESULT 7
ID FGF2_CHICK STANDARD; PRT; 158 AA.
AC P48800;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
growth factor) (HBGF).
GN FGF2 OR FGF-2.
OS Gallus gallus (Chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OX NCBI_TaxID=9031;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=93246053; Pubmed=7683281;
RA Borja A.Z., Zeller R., Meljers C.;
RT "Expression of alternatively spliced bFGF first coding exons and
antisense mRNAs during chicken embryogenesis."
RL Dev. Biol. 157:110-118(1993).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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DR EMBL: M95707; AAA48617.1; -.
DR HSSP: P09038; IBFF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IL1HBGF.
DR ProDom: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 12 BY SIMILARITY.
FT CHAIN 13 158 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 30 34 HEPARIN (POTENTIAL).
FT BINDING 119 122 HEPARIN (POTENTIAL).
SQ SEQUENCE 158 AA; 17374 MW; 7B69B684C1F1816 CRC64;
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Query Match 92.1%; Score 723; DB 1; Length 158;
Best Local Similarity 91.8%; Pred. No. 5.1e-69;
Matches 134; Conservative 5; Mismatches 7; Indels 0; Gaps 0;

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QY 1 PALPDGSGGAPPGHFKPKRLYCKNGGFLRIHPDGVDCVREKSDPHIKLOAER 60
DB 13 PALPDGSGGAPPGHFKPKRLYCKNGGFLRIHPDGVDCVREKSDPHIKLOAER 72
QY 61 GVSSTKGVANRYLAKMEKEDGLASKCVDCEFFERLESNNYNTYRSKYSWYVALKR 120
DB 73 GVSSTKGVANRYLAKMEKEDGLASKCVDCEFFERLESNNYNTYRSKYSWYVALKR 132
QY 121 TGOYKLGSKTGPQKAI 146
DB 133 TGOYKLGSKTGPQKAI 158
```

```
RESULT 8
FGF2_MONDO
ID FGF2_MONDO STANDARD: PRT: 156 AA.
AC P48798;
DT 01-FEB-1996 (Rel. 33, Created)
DR 01-FEB-1996 (Rel. 33, Last sequence update)
DE 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (basic fibroblast
DE growth factor) (BFGF) (Prostatropin).
GN FGF2.
OS Monodelphis domestica (Short-tailed grey opossum).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Metatheria; Didelphimorphia; Didelphidae; Monodelphis.
OX NCBI_TaxID=13616;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE-EYE;
RA MEDLINE=94296558; Pubmed=8024698;
RT Kuewilt D.F., Sabourin C.L.K., Sharburn T.E., Ley R.D.;
RT "Characterization of cDNA encoding basic fibroblast growth factor of
RT the marsupial Monodelphis domestica.";
RL DNA Cell Biol. 13:549-554(1994).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AEGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL: Z15154; CAA78854.1; ALT_INIT.
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILL_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; ILLHBGF.
DR PRODOM: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
DR PROPEP 1 9
DR CHAIN 10 156 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 28 32 HEPARIN (POTENTIAL).
FT BINDING 117 120 HEPARIN (POTENTIAL).
SQ SEQUENCE 156 AA; 17303 MM; 7655FCC49BF1209 CRC64;
Query Match 91.7%; Score 719.5; DB 1; Length 156;
Best Local Similarity 92.5%; Pred. No. 1.2e-68;
Matches 136; Conservative 5; Mismatches 5; Indels 1; Gaps 1;
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RESULT 9
FGF2_XENLA
ID FGF2_XENLA STANDARD: PRT: 155 AA.
AC P12226;
DT 01-OCT-1989 (Rel. 12, Created)
DR 01-JAN-1990 (Rel. 13, Last sequence update)
DE 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (basic fibroblast
DE growth factor) (BFGF).
GN FGF2 OR FGF-2.
OS Xenopus laevis (African clawed frog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Anura; Mesobatrachia; Pipidae; Pipidae;
OC Xenopodinae; Xenopus.
OX NCBI_TaxID=8355;
RN [1]
RP SEQUENCE FROM N.A.
RC MEDLINE=89058621; Pubmed=3194757;
RA Kiemelman D., Abraham J., Haaparanta T., Palisi T., Kirschner M.;
RT "The presence of fibroblast growth factor in the frog egg: its role
RT as a natural mesoderm inducer.";
RL Science 242:1053-1056(1988).
CC [2]
CC SEQUENCE OF 95-155 FROM N.A.
CC MEDLINE=88052890; Pubmed=3479265;
CC Kiemelman D., Kirschner M.;
CC "Synergetic induction of mesoderm by FGF and TGF-beta and the
CC identification of an mRNA coding for FGF in the early Xenopus
CC embryo.";
CC RL Cell 51:869-877(1987).
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC or send an email to license@isb-sib.ch).
CC -----
DR EMBL: M18067; AAA49726.1; -.
DR PIR: A29618; A29618.
DR PIR: A40117; A40117.
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILL_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; ILLHBGF.
DR PRODOM: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
DR PROPEP 1 9
DR CHAIN 10 155 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 27 31 HEPARIN (POTENTIAL).
FT BINDING 116 119 HEPARIN (POTENTIAL).
FT CONFLICT 111 111 MISSING (IN REF. 2).
SQ SEQUENCE 155 AA; 17241 MM; 036735C8063142FD CRC64;
Query Match 82.3%; Score 646; DB 1; Length 155;
Best Local Similarity 82.9%; Pred. No. 6.2e-61;
Matches 121; Conservative 9; Mismatches 16; Indels 0; Gaps 0;
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Oy	121	TGQYKLGSKTGGQKAILFLPMSAKS	146
Db	130	TGQYKNGSSTGGQKAILFLPMSAKS	155
RESULT 10			
FGFL_MESAU	ID	FGFL_MESAU	STANDARD: PRT: 155 AA.
AC	P34004		
DT	01-FEB-1994	(Rel. 28, Created)	
DT	01-FEB-1994	(Rel. 28, Last sequence update)	
DT	01-MAR-2002	(Rel. 41, Last annotation update)	
De		Heparin-binding growth factor 1 precursor (HBGF-1) (acidic fibroblast growth factor) (AFGF).	
GN	FGFL OR FGF-1.		
OC	Mesocricetus auratus (Golden hamster).		
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;		
OC	Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Cricetinae;		
OC	Mesocricetus.		
OX	NCBI_TaxID=10036;		
RL	[1]		
RA	SEQUENCE FROM N.A.		
RA	MEDLINE=90270291; PubMed=1693366;		
RP	Hall J.A., Harris M.A., Malark M., Mansson P.E., Zhou H., Harris S.E.;		
RT	"Characterization of the hamster DDT-1 cell aafGF/HBGF-1 gene and cDNA and its modulation by steroids.";		
RT	J. Cell. Biochem. 43:17-26(1990).		
CC	-1 FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND CONCENTRATION OF THESE 2 GROWTH FACTORS.		
CC	-1 SUBUNIT: MONOMER.		
CC	-1 MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY THAN DOES HBGF.		
CC	-1 SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.		
CC	PIR: A60721; A60721.		
DR	HSSP: P05230; IRML.		
DR	InterPro: IPR002209; HBGF_FGF.		
DR	InterPro: IPR002348; ILL_HBGF.		
DR	Pfam: PF00167; FGF, 1.		
DR	PRINTS: PR00262; ILLHBGF.		
DR	ProDom: PD000831; HBGF_FGF, 1.		
DR	SMART: SM00442; FGF, 1.		
DR	PROSITE: PS00247; HBGF_FGF, 1.		
KW	Growth factor; Mitogen; Angiogenesis; Heparin-binding.		
FT	PROPEP	1	15
FT	CHAIN	16	155
FT	BINDING	24	28
FT	BINDING	113	116
FT	SEQUENCE	155 AA;	17403 MW; 4155ECT60DE412CC5 CRC64;
Query Match 50.4%; Score 396; DB 1; Length 155;			
Best Local Similarity 56.6%; Pred. No. 1.2e-34;			
Matches 77; Conservative 16; Mismatches 41; Indels 2; Gaps 1;			
Oy	13	PPGHFKDKRLCYCKNGGFFLRHPDGRVDGVREKSDPHIKLOLAEERGVSIKGYCANR	72
Db	19	PPGNKKRKLILYCSNGGHFLRLIPDGTVDGTRDRSDQHLOLSAESAAGEVYIKETETEQ	78
Oy	73	YLAMEDGRLLASKCVTDECFEELESNNVTYSRKTY--SWYALKRTQYKLGST	130
Db	79	YLAMDTDGLGSGQPNNECFLERLEENHNVTYSKHAERKNRVAFLKKNSSCRGPR	138
Oy	131	GGQKAILFLPMSAKS	146
Db	139	HYGQKAILFLPVPSS	154
RESULT 11			
FGFL_HUMAN	ID	FGFL_HUMAN	STANDARD: PRT: 155 AA.
AC	P05230;		

DT 13-AUG-1987 (Rel. 05, Created)
 DT 13-AUG-1987 (Rel. 05, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor I precursor (HBSF-1) (Acidic fibroblast
 DE growth factor) (AFGF) (Beta-endothelial cell growth factor) (BCGF-
 DE beta).
 GN FGFI OR FGFA.
 OS Homo sapiens (Human).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Primates; Catarrhini; Homiidae; Homo.
 OX NCBI_TaxID:9606;
 RN [1]
 RP MEDLINE=86261805; PubMed=3523756;
 RA Jaffe M., Howk R., Burgess W., Rittca G.A., Chiu I.-M., Raveria M.W.,
 RA "Brian S.J., Modi W.S., Maciag T., Drihan W.N.;
 RT "Human endothelial cell growth factor: cloning, nucleotide sequence,
 RT and chromosome localization.";
 RL Science 233:541-545(1986).
 RN [2]
 RP SEQUENCE FROM N.A.
 RP TISSUE=Brain stem;
 RC MEDLINE=89343957; PubMed=2474753;
 RX Wang W.P., Lehtoma K., Vachan M.L., Krishnan I., Chiu I.M.;
 RA "Cloning of the gene coding for human class I heparin-binding growth
 RT factor and its expression in fetal tissues.";
 RL Mol. Cell. Biol. 9:2387-2395(1989).
 RN [3]
 RP SEQUENCE FROM N.A.
 RP TISSUE=Brain stem;
 RC MEDLINE=90265618; PubMed=1693186;
 RX Chiu I.M., Wang W.P., Lehtoma K.;
 RA "Alternative splicing generates two forms of mRNA coding for human
 RT heparin-binding growth factor I.";
 RL Oncogene 5:755-762(1990).
 RN [4]
 RP SEQUENCE FROM N.A.
 RP MEDLINE=90073637; PubMed=2590193;
 RX Mergia A., Tischer E., Graves D., Tumolo A., Miller J.,
 RA Gospodarowicz D., Abraham J.A., Shiple G.D., Fiddes J.C.;
 RT "Structural analysis of the gene for human acidic fibroblast growth
 RT factor.";
 RL Biochem. Biophys. Res. Commun. 164:1121-1129(1989).
 RN [5]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=92019819; PubMed=1717925;
 RA Wang W.P., Quick D., Balcerzak S.P., Needleman S.W., Chiu I.M.;
 RT "Cloning and sequence analysis of the human acidic fibroblast growth
 RT factor gene and its preservation in leukemia patients.";
 RL Oncogene 6:1521-1529(1991).
 RN [6]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=92202857; PubMed=1372643;
 RA Li Y.L., Kha H., Golden J.A., Mlychchielsen A.A.J., Goetzl E.J.,
 RA Turck E.J.;
 RT "An acidic fibroblast growth factor protein generated by alternate
 RT splicing acts like an antagonist.";
 RL J. Exp. Med. 175:1073-1080(1992).
 RN [7]
 RP SEQUENCE OF 1-154 FROM N.A.
 RX MEDLINE=94069734; PubMed=7504343;
 RA Zhao X.M., Yeoh T.K., Hiebert M., First W.H., Miller G.G.;
 RT "The expression of acidic fibroblast growth factor (heparin-binding
 RT growth factor-1) and cytokine genes in human cardiac allografts and T
 RT cells.";
 RL Transplantation 56:1177-1182(1993).
 RN [8]
 RP SEQUENCE OF 1-40 FROM N.A.
 RX MEDLINE=90365758; PubMed=2393407;
 RA Crumley G., Dionne C.A., Jaffe M.;
 RT "The gene for human acidic fibroblast growth factor encodes two
 RT upstream exons alternatively spliced to the first coding exon.";
 RL Biochem. Res. Commun. 171:7-13(1990).

[9]
RP SEQUENCE OF 16-155.
RX MEDLINE=86296647; PubMed=2427112;
RA Harper J.W., Striydom D.J., Lobb R.E.;
RT "Human class I heparin-binding growth factor: structure and homology
RT to bovine acidic brain fibroblast growth factor.";
RL Biochemistry 25:4097-4103(1986).
RN [10]
RP SEQUENCE OF 16-155.
RX MEDLINE=86295741; PubMed=3527167;
RA Gimenez-Gallego G., Conn G., Hatcher V.B., Thomas K.A.;
RT "The complete amino acid sequence of human brain-derived acidic
RT fibroblast growth factor.";
RL Biochem. Biophys. Res. Commun. 138:611-617(1986).
RN [11]
RP SEQUENCE OF 16-155.
RX MEDLINE=87048871; PubMed=3778488;
RA Gautschi-Sova P., Mueller T., Boehlen P.;
RT "Amino acid sequence of human acidic fibroblast growth factor.";
RL Biochem. Biophys. Res. Commun. 140:874-880(1986).
RN [12]
RP SEQUENCE OF 16-47.
RX MEDLINE=86186784; PubMed=3964259;
RA Gimenez-Gallego G., Conn G., Hatcher V.B., Thomas K.A.;
RT "Human brain-derived acidic and basic fibroblast growth factors:
RT amino terminal sequences and specific mitogenic activities.";
RL Biochem. Biophys. Res. Commun. 135:541-548(1986).
RN [13]
RP SEQUENCE OF 16-49.
RX MEDLINE=86275260; PubMed=3732516;
RA Gautschi P., Frazer-Schroeder M., Boehlen P.;
RT "Partial molecular characterization of endothelial cell mitogens from
RT human brain: acidic and basic fibroblast growth factors.";
RL FEBS Lett. 204:203-207(1986).
RN [14]
RP X-RAY CRYSTALLOGRAPHY (2.0 ANGSTROMS).
RX MEDLINE=96194129; PubMed=8652550;
RA Blaber M., Disalvo J., Thomas K.A.;
RT "X-ray crystal structure of human acidic fibroblast growth factor.";
RL Biochemistry 35:2086-2094(1996).
RN [15]
RP STRUCTURE BY NMR OF 24-155.
RX MEDLINE=94358885; PubMed=7521397;
RA Plinede-Lucena A., Jimenez M.A., Nieto J.L., Santoro J., Rico M.,
RA Gimenez-Gallego G.;
RT "1H-NMR assignment and solution structure of human acidic fibroblast
RT growth factor activated by inositol hexasulfate.";
RL J. Mol. Biol. 242:81-98(1994).
RN [16]
RP STRUCTURE BY NMR OF 24-155.
RX MEDLINE=97107535; PubMed=8950275;
RA Plinede-Lucena A., Jimenez M.A., Lozano R.M., Nieto J.L., Santoro J.,
RA Rico M., Gimenez-Gallego G.;
RT "Three-dimensional structure of acidic fibroblast growth factor in
RT solution: effects of binding to a heparin functional analog.";
RL J. Mol. Biol. 264:162-178(1996).
RN [17]
RP STRUCTURE BY NMR OF 25-155.
RX MEDLINE=96387896; PubMed=9719643;
RA Lozano R.M., Jimenez M., Santoro J., Rico M., Gimenez-Gallego G.;
RT "Solution structure of acidic fibroblast growth factor bound to 1,3,
RT 6-naphthylethylsulfonate: a minimal model for the anti-tumoral
RT action of suramin and suradistat.";
RL J. Mol. Biol. 281:899-915(1996).
RN [18]
RP FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES BFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----

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CC -----
CC
CC EMBL: M13361: AAA79245.1; -
CC DR EMBL: X51943: CAA36206.1; -
CC DR EMBL: M30492: AAA52446.1; -
CC DR EMBL: M30490: AAA52446.1; JOINED.
CC DR EMBL: M30491: AAA52446.1; JOINED.
CC DR EMBL: M60515: AAA51672.1; -
CC DR EMBL: M60516: AAA51673.1; -
CC DR EMBL: M23087: AAA52638.1; -
CC DR EMBL: M23086: AAA52638.1; JOINED.
CC DR EMBL: S67291: AAB29057.2; -
CC DR EMBL: X65778: CAA46661.1; -
CC DR PIR: A23553: A23553.
CC DR PIR: A24243: A24243.
CC DR PIR: A24301: A24301.
CC DR PIR: A24662: A24662.
CC DR PIR: A24820: A24820.
CC DR PIR: A26386: A26386.
CC DR PIR: A33665: A33665.
CC DR PIR: S18217: S18217.
CC DR PDB: 2AR6: 15-OCT-95.
CC DR PDB: 1AXM: 22-APR-98.
CC DR PDB: 2AXM: 22-APR-98.
CC DR PDB: 1RML: 11-NOV-98.
CC DR MIM: 131220: -
CC DR InterPro: IPRO02209: HBGF_FGF.
CC DR InterPro: IPRO02348: ILL_HBGF.
CC DR Pfam: PF00167: FGF_1.
CC DR PRINTS: PR00262: ILLHBGF.
CC DR PRODOM: PD000831: HBGF_FGF_1.
CC DR SMART: SM00442: FGF_1.
CC DR PROSITE: PS00247: HBGF_FGF_1.
CC KM Growth factor; Mitogen; Angiogenesis; Heparin-binding; Acetylation;
CC KW 3D-structure.
CC
CC FT PROPEP 1 15
CC FT CHAIN 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
CC FT MOD_RES 2 2 ACETYLTATION.
CC FT BINDING 24 28 HEPARIN (POTENTIAL).
CC FT BINDING 113 116 HEPARIN (POTENTIAL).
CC SQ SEQUENCE 155 AA; 17460 MW; F586B8BFB09F1580 CRC64;
CC
CC Query Match 49.2%; Score 386; DB 1; Length 155;
CC Best Local Similarity 55.9%; Pred. No. 1.3e-33;
CC Matches 76; Conservative 16; Mismatches 42; Indels 2; Gaps 1;
CC
CC QY 13 PGHGFDPKRLRYCKNGGFELRHPDGRVYDGVREKSDPHIKILOAEERGVSIGKVCANR 72
CC Db |||::: || ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
CC 19 PPGNYGKPKLLYCGNSGNGFELRLPDGYDGRDSODIQLDLSAESGEVYIKSTETGQ 78
CC QY 73 YLAKEEDGRLLASKCVYDCEFFERLESNNNTYRSRYT--SWYVALKRTGOYKLGSKT 130
CC Db |||| ||| ||| ::: || ||| ||| ||| ||| ||| ||| ||| ||| |||
CC 79 YLAMDTDGLLIGSQTPNECELFLERLLENHNHYNTYISKHAKEKNMFVGLKKNKSGCRGPR 138
CC QY 131 GPGOKALIFLPMASAKS 146
CC Db |||||||||:|
CC 139 HYGOKALIFLPLPVSS 154
CC
CC RESULT 12
CC FGFI_CHICK STANDARD; PRT; 155 AA.
CC AC P19396;
CC DT 01-FEB-1991 (Rel. 17, Created)
CC DT 01-FEB-1996 (Rel. 33, Last sequence update)
CC DT 01-MAR-2002 (Rel. 41, Last annotation update)

```

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DE Heparin-binding growth factor I precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF) (Alpha-endothelial cell growth factor).
GN FGFI OR FGF-1.
OS Gallus gallus (Chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OC NCBI_TaxID=9031;
RN [1]
RN SEQUENCE FROM N.A.
RX MEDLINE=91347925; PubMed=1715259;
RA Schurch H., Risau W.;
RT "Differentiating and mature neurons express the acidic fibroblast
RT growth factor gene during chick neural development.";
RN [2]
RN SEQUENCE FROM N.A.
RA Martin G.R., Han J.K.;
RL Submitted (JUL-1995) to the EMBL/GenBank/DBJ databases.
RN [3]
RX MEDLINE=8296438; PubMed=3402441;
RA Risau W., Gautschi-Sova P., Boehlen P.;
RT "Endothelial cell growth factors in embryonic and adult chick brain
RT are related to human acidic fibroblast growth factor.";
RL EMO J. 7:959-962(1988).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES BFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC -----
DR EMBL: S63263; AAB19629.1; -
DR EMBL: U31863; AAA80310.1; -
DR EMBL: S63261; AAD13942.1; -
DR PIR: S02639; S02639.
DR HSP: P05230; 2AXM.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IL1HBGF.
DR PRODOM: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROSITE; PS00247; HBGF_FGF_1.
FT CHAIN 1 155 HEPARIN-BINDING GROWTH FACTOR 1.
FT CHAIN 16 155 ENDOTHelial CELL GROWTH FACTOR ALPHA.
FT BINDING 22 155 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
FT SEQUENCE 155 AA; 17322 MW; 8EDB70545E2B4365 CRC64;

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Query Match 48.9%; Score 383.5; DB 1; Length 155;
Best Local Similarity 54.5%; Pred. No. 2.4e-33;
Matches 78; Conservative 20; Mismatches 40; Indels 5; Gaps 2;

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OY 2 ALPEGGGSGAPPFGHFKPKRLYLCKNGFFLIRHPDGRVGVREKSDPHIKLQLAENG 61
DB 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
DB 11 ALTERFG--LPLGNVKKPKLLKXGNGHFLILPLDGKVDGRDRSDQIQQLSADVYG 67
OY 62 VVISIGVCANRYLAMEKEDGRLLASKCVTDECFEERLESNNYNTYRSRYT--SWIVALK 119

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DB 68 EVYIKSTASQGYLAMDNGILYGSQLPGECEFLERLEENHYNTYISKRIADNMWVGK 127
OY 120 RTGQYKLGSKTGPQKAILFLPM 142
DB 128 KNGNSKLGPRTHYGQKAILFLPL 150
RESULT 13
FGFI_MOUSE STANDARD; PRT; 155 AA.
ID FGFI_MOUSE
AC P10935;
DT 01-JUL-1989 (Rel. 11, Created)
DT 01-JUL-1989 (Rel. 11, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF).
GN FGFI OR FGF-1 OR FGFA.
OS Mus musculus (Mouse), and
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090, 10116;
RN [1]
RN SEQUENCE FROM N.A.
RC SPECIES-Rat;
RX MEDLINE=89240051; PubMed=2470029;
RA Goodrich S., Yan G.C., Bahrenburg K., Mansson P.E.;
RT "The nucleotide sequence of rat heparin binding growth factor 1
RT (HBGF-1).";
RL Nucleic Acids Res. 17:2867-2867(1989).
RN [2]
RN SEQUENCE FROM N.A.
RC SPECIES-Mouse;
RX MEDLINE=90201563; PubMed=2318343;
RA Hebert J.M., Basilico C., Goldfarb M., Haub O., Martin G.R.;
RT "Isolation of cDNAs encoding four mouse FGF family members and
RT characterization of their expression patterns during embryogenesis.";
RL Dev. Biol. 138:454-463(1990).
RN [3]
RN SEQUENCE FROM N.A.
RC SPECIES-Mouse;
RX MEDLINE=97128312; PubMed=8972905;
RA Madral F., Hackshaw K.V., Chiu I.M.;
RT "Cloning and characterization of the mouse Fgf-1 gene.";
RL Gene 179:231-236(1996).
RN [4]
RN SEQUENCE FROM N.A.
RC SPECIES-Mouse; STRAIN=BALB/C;
RX MEDLINE=97094746; PubMed=8939980;
RA Alam K.Y., Frostholt A., Hackshaw K.V., Evans J.E., Rotter A.,
RA Chiu I.M.;
RT "Characterization of the 1b promoter of fibroblast growth factor 1
RT and its expression in the adult and developing mouse brain.";
RL J. Biol. Chem. 271:30263-30271(1996).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC -----
DR EMBL: X14232; CAA32448.1; -
DR EMBL: M30641; AAA37618.1; -
DR EMBL: U36459; AAC52969.1; -

```


RT "Nucleotide sequence of bovine acidic fibroblast growth factor cDNA.";
RL Nucleic Acids Res. 16:10913-10913(1988).
RN [2]
RP SEQUENCE FROM N.A.
RC TISSUE-Retina:
RX MEDLINE-89076619; PubMed-2849564;
RA Alterio J., Hallay C., Brou C., Soussi T., Courtois Y., Laurent M.;
RT "Characterization of a bovine acidic FGF cDNA clone and its
RL expression in brain and retina.";
RN FEBS Lett. 242:41-46(1988).
RN [3]
RP SEQUENCE OF 2-155.
RX MEDLINE-87016918; PubMed-3532107;
RA Burgess W.H., Melman T., Marshak D.R., Fraser B.A., Maciag T.;
RT "Structural evidence that endothelial cell growth factor beta is the
RT precursor of both endothelial cell growth factor alpha and acidic
RL fibroblast growth factor.";
RN Proc. Natl. Acad. Sci. U.S.A. 83:7216-7220(1986).
RN [4]
RP SEQUENCE OF 2-155.
RX MEDLINE-87026586; PubMed-3768327;
RA Crabb J.W., Ames L.G., Carr S.A., Johnson C.M., Roberts G.D.,
RL Bortoli R.S., McKeenan W.L.;
RT "Complete primary structure of prostatin, a prostate epithelial
RT cell growth factor.";
RN Biochemistry 25:4988-4993(1986).
RN [5]
RP SEQUENCE OF 16-155.
RX MEDLINE-86070224; PubMed-4071057;
RA Gimenez-Gallego G., Rodkey J., Bennett C., Rios-Candelore M.,
RL Disalvo J., Thomas K.;
RT "Brain-derived acidic fibroblast growth factor: complete amino acid
RT sequence and homologues.";
RN Science 230:1385-1388(1985).
RN [6]
RP SEQUENCE OF 16-44, AND COMPOSITION.
RX MEDLINE-86055750; PubMed-4065099;
RA Boellgen P., Esch F., Balrd A., Gospodarowicz D.;
RT "Acidic fibroblast growth factor (FGF) from bovine brain:
RL amino-terminal sequence and comparison with basic FGF.";
RN EMBO J. 4:1951-1956(1985).
RN [7]
RP SEQUENCE OF 16-56 FROM N.A.
RX MEDLINE-86261806; PubMed-2425435;
RA Abraham J.A., Merz A., Whang J.L., Tumolo A., Friedman J.,
RL Hjerrild K.A., Gospodarowicz D., Fiddes J.C.;
RT "Nucleotide sequence of a bovine clone encoding the angiogenic
RT protein, basic fibroblast growth factor.";
RN Science 233:545-548(1986).
RN [8]
RP SEQUENCE OF 16-45.
RX MEDLINE-89231704; PubMed-2714282;
RA Quinkler W., Maasberg M., Bernotat-Danielowski S., Luethe N.,
RL Sharma H.S., Schaper W.;
RT "Isolation of heparin-binding growth factors from bovine, porcine and
RT canine hearts.";
RN Eur. J. Biochem. 181:67-73(1989).
RN [9]
RP SEQUENCE OF 1-18 FROM N.A.
RA Philippe J.M., Renaud F., Desset S., Laurent M.;
RL Submitted (JUL-1992) to the EMBL/GenBank/DBJ databases.
RN (10)
RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).
RX MEDLINE-91095983; PubMed-1702556;
RA Zhu X., Komiya H., Chitrino A., Faham S., Fox G.M., Arakawa T.,
RL Hsu B.T., Rees D.C.;
RT "Three-dimensional structures of acidic and basic fibroblast growth
RT factors.";
RN Science 251:90-93(1991).
CC -!- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.

CC -!- SUBUNIT: MONOMER.
CC -!- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES BEGF.
CC -!- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
CC EMBL: M13339; AAA30516.1; -;
CC EMBL: X13321; CAA31610.1; -;
CC EMBL: X14032; CAA32192.1; -;
CC EMBL: M35608; AAA30517.1; -;
CC EMBL: X66446; CAA47063.1; -;
CC EMBL: M97660; AAA30563.1; -;
CC EMBL: M97661; AAA30564.1; -;
CC PIR: A01385; GKBOA.
CC PIR: A25043; A25043.
CC PIR: B25043; B25043.
CC PIR: C25043; C25043.
CC PIR: A24477; A24477.
CC PIR: B24663; B24663.
CC PIR: S02102; S02102.
CC PDB: 1BAR; 31-OCT-93.
CC PDB: 1AFC; 31-OCT-93.
CC InterPro: IPR002209; HBGF_FGF.
CC InterPro: IPR002348; ILL_HBGF.
CC Pfam: PF00167; FGF; 1.
CC PRINTS: PR00262; ILL_HBGF.
CC ProDom: PD000831; HBGF_FGF; 1.
CC SMART: SM00442; FGF; 1.
CC PROSITE: PS00247; HBGF_FGF; 1.
CC Growth factor: Mitogen; Angiogenesis; Heparin-binding; Acetylation;
CC 3D-structure.
CC KW PROPEP 1 15
CC FT CHAIN 2 155
CC FT CHAIN 16 155
CC FT CHAIN 22 155
CC FT MOD_RES 2 2
CC FT BINDING 24 28
CC FT STRAND 27 31
CC FT TURN 32 34
CC FT STRAND 37 40
CC FT TURN 42 43
CC FT STRAND 46 49
CC FT HELIX 55 57
CC FT STRAND 59 61
CC FT STRAND 69 69
CC FT STRAND 71 73
CC FT STRAND 79 82
CC FT TURN 84 85
CC FT STRAND 87 91
CC FT HELIX 96 98
CC FT STRAND 100 100
CC FT STRAND 103 104
CC FT TURN 106 107
CC FT STRAND 110 111
CC FT STRAND 113 114
CC FT STRAND 116 121
CC FT TURN 123 123
CC FT STRAND 126 126
CC FT TURN 129 129
CC FT STRAND 132 132
CC FT STRAND 134 134
CC FT HELIX 135 137
CC FT TURN 140 141
CC FT TURN 144 145
CC FT STRAND 147 150
CC -----
CC ENDOTHELIAL CELL GROWTH FACTOR BETA.
CC HEPARIN-BINDING GROWTH FACTOR 1.
CC ENDOTHELIAL CELL GROWTH FACTOR ALPHA.
CC ACETYLATION
CC HEPARIN (POTENTIAL).
CC HEPARIN (POTENTIAL).

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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:46:13 ; Search time 78.17 Seconds
(without alignments)
323.107 Million cell updates/sec

Title: US-09-802-365-4

Perfect score: 785
Sequence: 1 PALPEDGSGAFPPGHFKDP.....GSKTGPGRKAILFLPWSAKS 146

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 562222 seqs, 172994929 residues

Total number of hits satisfying chosen parameters: 562222

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database :

SPREMBL_19:*
1: sp.archaea:*
2: sp.bacteria:*
3: sp.fungi:*
4: sp.human:*
5: sp_invertebrate:*
6: sp.mammal:*
7: sp.mhc:*
8: sp.organelle:*
9: sp.phage:*
10: sp.plant:*
11: sp.prodent:*
12: sp.virus:*
13: sp_vertebrate:*
14: sp_unclassified:*
15: sp.rvirus:*
16: sp.bacteriap:*
17: sp_archeap:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	785	100.0	196	4 P78443	P78443 homo sapien
2	741	94.4	153	11 0925A3	0925A3 mus musculu
3	701	89.3	170	11 060487	060487 cavia porce
4	682	86.9	130	6 077767	077767 canis famill
5	667	85.0	155	13 090Y92	090Y92 cynops pyrr
6	585	74.5	111	6 09BDX1	09BDX1 macaca mula
7	567	72.2	125	13 098RD8	098RD8 cynops pyrr
8	561	71.5	108	6 09N1S7	09N1S7 capreolus c
9	490	62.4	109	11 0925A1	0925A1 mus musculu
10	486	61.9	112	11 0925A2	0925A2 mus musculu
11	476	60.6	101	13 P79706	P79706 cynops pyrr
12	468.5	59.7	146	13 007659	007659 gallus gall
13	341	43.4	76	6 09N0Y2	09N0Y2 ovis aries
14	292	37.2	106	6 09N1S8	09N1S8 capreolus c
15	287	36.6	114	4 000527	000527 homo sapien
16	287	36.6	114	4 016443	016443 homo sapien

17	249	31.7	196	13 09YH31	09YH31 notophthalm
18	245	31.2	124	13 090X05	090X05 ambystoma m
19	229	29.2	206	13 09YGD8	09YGD8 oncorhynchu
20	224	28.5	111	13 090X01	090X01 ambystoma m
21	215	27.4	208	6 095112	095112 sus scrofa
22	213	27.1	191	13 09DFC9	09DFC9 brachydanio
23	208	26.5	208	13 09PYV1	09PYV1 xenopus lae
24	208	26.5	212	11 09ESL9	09ESL9 mus musculu
25	205.5	26.2	207	11 09ESL8	09ESL8 mus musculu
26	205.5	26.2	207	11 09ER05	09ER05 mus musculu
27	204	26.0	212	11 09EST9	09EST9 ratius norv
28	203	25.9	208	6 09SK97	09SK97 macaca fasc
29	202.5	25.8	212	13 042407	042407 gallus gall
30	195.5	24.6	134	13 090X03	090X03 ambystoma m
31	193.5	24.6	213	6 09N1B9	09N1B9 ovis aries
32	193	24.6	208	4 096P59	096P59 homo sapien
33	191.5	24.4	186	6 095147	095147 mustela vis
34	189.5	24.1	237	13 091A16	091A16 gallus gall
35	189	24.1	112	13 090XP9	090XP9 ambystoma m
36	188.5	24.0	252	11 089096	089096 ratius norv
37	188.5	24.0	253	13 091A15	091A15 gallus gall
38	185.5	23.6	185	11 09ERN5	09ERN5 ratius norv
39	180.5	23.0	181	11 0924B4	0924B4 ratius norv
40	179.5	22.9	127	4 099517	099517 homo sapien
41	178.5	22.7	302	11 09CSX5	09CSX5 mus musculu
42	175.5	22.4	199	13 091A13	091A13 gallus gall
43	173.5	22.1	245	13 09W6A2	09W6A2 gallus gall
44	172.5	22.0	181	13 091A17	091A17 gallus gall
45	171	21.8	243	13 09W6A1	09W6A1 gallus gall

ALIGNMENTS

RESULT	ID	1	PRELIMINARY;	PRT;	196 AA.
P78443	P78443				
AC	P78443;				
DT	01-MAY-1997 (TREMBLrel. 03, Created)				
DT	01-MAY-1997 (TREMBLrel. 03, Last sequence update)				
DT	01-JUN-2001 (TREMBLrel. 17, Last annotation update)				
DE	21 KDA BASIC FIBROBLAST GROWTH FACTOR (BGF).				
GN	BGF2.				
OS	Homo sapiens (Human).				
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;				
OC	Mammalia; Eutheria; Primates; Catarrhini; Hominiidae; Homo.				
OX	NCBI_TaxID=9606;				
RN	[1]				
RP	SEQUENCE FROM N.A.				
RP	MEDLINE=93038590; PubMed=1417798;				
RA	Watson R., Anthony F., Pickett M., Lambden P., Masson G.M.,				
RA	Thomas E.J.;				
RT	"Reverse transcription with nested polymerase chain reaction shows				
RT	expression of basic fibroblast growth factor transcripts in human				
RT	granulosa and cumulus cells from in vitro fertilisation patients."				
RL	Biochem. Biophys. Res. Commun. 187:1227-1231(1992).				
DR	EMBL; J04513; AA52532.1; -.				
DR	EMBL; S47380; AAD13853.1; -.				
DR	HSSP; P09038; 1BFF.				
DR	InterPro; IPR002209; HBGF_FGF.				
DR	InterPro; IPR002348; IIL_HBGF.				
DR	Pfam; PF00167; FGF. 1.				
DR	PRINTS; PR00262; IILHBGF.				
DR	ProDom; PD000831; HBGF_FGF. 1.				
DR	SMART; SM00442; FGF. 1.				

DR PROSITE: PS00247; HBGF_FGF; 1.
SQ SEQUENCE 196 AA; 21203 MW; DB5447137E60343 CRC64;

Query Match 100.0%; Score 785; DB 4; Length 196;
Best Local Similarity 100.0%; Pred. NO. 3.2e-78;
Matches 146; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PALPEDGSGAAPPFGHFKDPKRLKCKNGGFLRIHPDGVDGVREKSDPHIKLOQAEER 60
DB 51 PALPEDGSGAAPPFGHFKDPKRLKCKNGGFLRIHPDGVDGVREKSDPHIKLOQAEER 110
OY 61 GVAISTKGVCANRYLAMKEDGRLASKCVTDECFPERLESNNYNYRSRKYTSWYALKR 120
DB 111 GVAISTKGVCANRYLAMKEDGRLASKCVTDECFPERLESNNYNYRSRKYTSWYALKR 170
OY 121 TGOYKLGSKTGPQKAILFLPMSAKS 146
DB 171 TGOYKLGSKTGPQKAILFLPMSAKS 196

RESULT 2
O925A3 PRELIMINARY; PRT: 153 AA.

AC O925A3;
DT 01-DEC-2001 (TREMBLrel. 19, Created)
DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
CN FGF2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sclurognathi; Muridae; Murinae; Mus.
OC NCBI_Taxid=10090;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=FVB/N;
RA Ditts R.P., Gilep A.E.;
RT "Multiple novel variants of fibroblast growth factor 2 transcripts are
RT expressed in mouse embryos.";
RL Submitted (FEB-2001) to the EMBL/GenBank/DBJ databases.
DR EMBL: AY027551; AAK52308.1; -
SQ SEQUENCE 153 AA; 17024 MW; ADB163CDB8FA2RAAB CRC64;

Query Match 94.4%; Score 741; DB 11; Length 153;
Best Local Similarity 95.9%; Pred. NO. 1.6e-73;
Matches 140; Conservative 4; Mismatches 0; Indels 2; Gaps 2;

OY 1 PALPEDGSGAAPPFGHFKDPKRLKCKNGGFLRIHPDGVDGVREKSDPHIKLOQAEER 60
DB 10 PALPEDGGA-AAPPGHFKDPKRLKCKNGGFLRIHPDGVDGVREKSDPHIKLOQAEER 68
OY 61 GVAISTKGVCANRYLAMKEDGRLASKCVTDECFPERLESNNYNYRSRKYTSWYALKR 120
DB 69 GVAISTKGVCANRYLAMKEDGRLASKCVTDECFPERLESNNYNYRSRKYTSWYALKR 127
OY 121 TGOYKLGSKTGPQKAILFLPMSAKS 146
DB 128 TGOYKLGSKTGPQKAILFLPMSAKS 153

RESULT 3
O60487 PRELIMINARY; PRT: 170 AA.

AC O60487;
DT 01-NOV-1996 (TREMBLrel. 01, Created)
DT 01-MAY-2000 (TREMBLrel. 13, Last sequence update)
DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2 (FGF-2) (FIBROBLAST GROWTH FACTOR, BASIC)
DE (BFGF) (HEPARIN-BINDING GROWTH FACTOR 2) (HBGF-2) (PROSTATROPIN)
DE (PROSTATIC GROWTH FACTOR) (FRAGMENTS).
CN FGF2.

OS Cavia porcellus (Guinea pig).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Hystriocognathi; Cavidae; Cavia.
OC NCBI_Taxid=10141;
RN [1]
RP SEQUENCE OF 53-170 FROM N.A.
RC TISSUE=PROSTATE;
RA Ricciardelli C.;
RL Submitted (JAN-1996) to the EMBL/GenBank/DBJ databases.
RN [2]
RP SEQUENCE OF N-TERMINUS, PARTIAL SEQUENCE, AND ALTERNATIVE SPLICING.
RX MEDLINE=89273588; PubMed=2730645;
RA Sommer A., Moscatelli D., Rifkin D.B.;
RT "An amino-terminally extended and post-translationally modified form
RT of a 25kD basic fibroblast growth factor.";
RL Biochem. Biophys. Res. Commun. 160:1267-1274(1989).
RN [3]
RP PARTIAL SEQUENCE, AND METHYLATION.
RX MEDLINE=91322114; PubMed=1713785;
RA Burgess W.H., Bizik J., Mehlman T., Quarto N., Rifkin D.B.;
RT "Direct evidence for methylation of arginine residues in high
RT molecular weight forms of basic fibroblast growth factor.";
RL Cell Regul. 2:87-93(1991).
RN [4]
RP CHARACTERIZATION.
RC TISSUE=BRAIN;
RX MEDLINE=87289686; PubMed=3475702;
RA Moscatelli D., Joseph-Silverstein J., Manejias R., Rifkin D.B.;
RT "Mr 25,000 heparin-binding protein from guinea pig brain is a high
RT molecular weight form of basic fibroblast growth factor.";
RL Proc. Natl. Acad. Sci. U.S.A. 84:5778-5782(1987).
RN [5]
RP FUNCTION: WIDE-SPECTRUM MITOGENIC, ANGIOGENIC, AND NEUROTROPHIC
RP FACTOR. IMPLICATED IN A MULTITUDE OF PHYSIOLOGIC AND PATHOLOGIC
RP PROCESSES, INCLUDING LIMB DEVELOPMENT, ANGIOGENESIS, WOUND
RP HEALING, AND TUMOR GROWTH. POTENT MITOGEN AND CHEMOATTRACTANT FOR
RP MESENCHYME-DERIVED CELLS. IMPLICATED IN THE DIFFERENTIATION,
RP PROLIFERATION, AND MAINTENANCE OF CELLS IN THE CENTRAL NERVOUS
RP SYSTEM AND IN BONE FORMATION. MAJOR ANGIOGENIC FACTOR THAT ALSO
RP ACTIVATES TUMOR NEOVASCULARIZATION (BY SIMILARITY).
RP -1 SUBUNIT: FORMS A QUATERNARY COMPLEX WITH TWO FGF1 AND AT LEAST
RP ONE HEPARAN SULFATE (BY SIMILARITY).
RP -1 ALTERNATIVE PRODUCTS: AT LEAST TWO ISOFORMS: 18 KDA AND 25 KDA
RP (SHOWN HERE); MAY BE PRODUCED BY USE OF ALTERNATIVE TRANSLATION
RP INITIATION SITES. BOTH FORMS ARE ACTIVE.
RP -1 PTM: THE N-TERMINAL OF ISOFORM 18 KDA IS BLOCKED (PROBABLY).
RP -1 SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
RP CAUTION: THIS IS A CONCEPTUAL TRANSLATION; MANY FRAMESHIFTS WERE
RP INTRODUCED FROM RESIDUES 77, 88, 93 AND 149 DOWNWARD TO EXTEND THE
RP SIMILARITY TO THE HUMAN SEQUENCE AS WELL AS ON THE BASIS OF
RP PARTIAL AMINO-ACID SEQUENCING.
DR EMBL: L75974; AAB85394.1; ALT_FRAME.
DR HSSP: P09038; 1BLA.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILL_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; ILLHBGF.
DR ProDom: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
DR Growth factor: Mitogen; Vascularization; Heparin-binding;
KW Alternative initiation; Methylation; Phosphorylation;
KW Developmental protein.
FT NON_TER 1
FT NON_CONS 15 16
FT CHAIN <1 170
FT CHAIN 22 170
FT INIT_MET 22 22
FT DOMAIN 11 14
FT NON_CONS 50 51
FT SITE 61 63
FT SITE 103 105
FT BINDING 50 51
FT BINDING 105 105
FT CELL ATTACHMENT SITE (POTENTIAL).
FT CELL ATTACHMENT SITE (POTENTIAL).
FT HEPARIN (BY SIMILARITY).
FT HEPARIN (BY SIMILARITY).
FT BINDING 105 105

ST
SITE
BINDING

(Rhesus macaque).
:zoa; Chordata; Craniata; Vertebrata; Euteleostomi;
:a; Primates; Catarrhini; Cercopithecoidea;
a; Macaca.

4;

RT Sekhon N.A.
RT "Alterations in Collagen and Elastin Gene Expression in Fetal
RT Pulmonary Vessels in Monkeys Following Prenatal Nicotine Exposure: A
RT Possible Role of alpha1 Nicotinic Acetylcholine Receptor in Persistent
RT Pulmonary Hypertension."
RT Submitted (MAR-2000) to the EMBL/GenBank/DBJ databases.
RL EMBL; AF251270; AAK37962.1; -
DR HSSP; P09038; 2FGF.
DR InterPro; IPR002209; HBGF_FGF.
DR Pfam; PF00167; FGF_1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
FT NON_TER 1
FT NON_TER 1
SQ SEQUENCE 111 AA; 12633 MW; EC0967A5261F5487 CRC64;

Query Match 74.5%; Score 585; DB 6; Length 111;
Best Local Similarity 100.0%; Pred. No. 1.4e-56;
Matches 111; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 34 IHPDGRVGVREKSDPHIKIQLQAEERGVVSIGVCANRYLAMKEDGRLLASKCVTDEC 93
DB 1 IHPDGRVGVREKSDPHIKIQLQAEERGVVSIGVCANRYLAMKEDGRLLASKCVTDEC 60
QY 94 FFERLESNNYNTYRSRKYTSWYVALKRTGQYKLGSKTGPQOKALFLPMSA 144
DB 61 FFERLESNNYNTYRSRKYTSWYVALKRTGQYKLGSKTGPQOKALFLPMSA 111

RESULT 7
Q98TD8 PRELIMINARY; PRT; 125 AA.
AC Q98TD8;
DT 01-JUN-2001 (Tremblrel. 17, Created)
DT 01-JUN-2001 (Tremblrel. 17, Last sequence update)
DT 01-DEC-2001 (Tremblrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR-2 (FRAGMENT).
GN FGF-2.
OS Cynops pyrrhogaster (Japanese common newt).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Caudata; Salamandroidae; Salamandridae; Cynops.
OX NCBI_TaxID=8330;
RN [1]
RP SEQUENCE FROM N.A.
RA Mizuno N., Hayashi T., Kondoh H., Okamoto M.;
RT "Cynops fibroblast growth factor-2."
RL Submitted (OCT-2000) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB049625; BAB40835.1; -
DR HSSP; P09038; 1BFG.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
FT NON_TER 1
FT NON_TER 1
SQ SEQUENCE 125 AA; 14244 MW; 5C27F41DC6E60C13 CRC64;

Query Match 72.2%; Score 567; DB 13; Length 125;
Best Local Similarity 87.1%; Pred. No. 1.5e-54;

Matches 108; Conservative 7; Mismatches 9; Indels 0; Gaps 0;

QY 23 LYCKNGGFFLRTHPDGRVGVREKSDPHIKIQLQAEERGVVSIGVCANRYLAMKEDGRLL 82
DB 2 LYCKNGGFFLRINSQKVDGARREKSDSYIKIQLQAEERGVVSIGVCANRYLAMKEDGRLL 61
QY 83 LASKCVTDECFFERLESNNYNTYRSRKYTSWYVALKRTGQYKLGSKTGPQOKALFLP 142
DB 62 MALKNITDECFFERLESNNYNTYRSRKYTSWYVALKRTGQYKLGSKTGPQOKALFLP 121
QY 143 SAKS 146
DB 122 SAKS 125

RESULT 8
Q9N1S7 PRELIMINARY; PRT; 108 AA.
AC Q9N1S7;
DT 01-OCT-2000 (Tremblrel. 15, Created)
DT 01-OCT-2000 (Tremblrel. 15, Last sequence update)
DT 01-DEC-2001 (Tremblrel. 19, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
GN BFGF.
OS Capreolus capreolus (Roe deer).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Cervoidae;
OC Cervidae; Odocoileinae; Capreolus.
OX NCBI_TaxID=9858;
RN [1]
RP SEQUENCE FROM N.A.
RA TISSUE-TESTIS;
RX MEDLINE=20532861; PubMed=11078967;
RA Wagener A., Bliotner S., Goritz F., Fickel J.;
RT "Detection of growth factors in the testis of roe deer (Capreolus
capreolus)."
RL Anim. Reprod. Sci. 64:65-75(2000).
DR EMBL; AF152587; AAF73226.1; -
DR HSSP; P09038; 4FGF.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
FT NON_TER 1
FT NON_TER 1
SQ SEQUENCE 108 AA; 12399 MW; 6BC7B7244214567E CRC64;

Query Match 71.5%; Score 561; DB 6; Length 108;
Best Local Similarity 98.1%; Pred. No. 5.8e-54;
Matches 106; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 33 RIHPDGRVGVREKSDPHIKIQLQAEERGVVSIGVCANRYLAMKEDGRLLASKCVTDEC 92
DB 1 RIHPDGRVGVREKSDPHIKIQLQAEERGVVSIGVCANRYLAMKEDGRLLASKCVTDEC 60
QY 93 FFERLESNNYNTYRSRKYTSWYVALKRTGQYKLGSKTGPQOKALFL 140
DB 61 FFERLESNNYNTYRSRKYTSWYVALKRTGQYKLGSKTGPQOKALFL 108

RESULT 9
Q92SA1 PRELIMINARY; PRT; 109 AA.
AC Q92SA1;
DT 01-DEC-2001 (Tremblrel. 19, Created)
DT 01-DEC-2001 (Tremblrel. 19, Last sequence update)
DT 01-DEC-2001 (Tremblrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
GN FGF2.

[illegible]

Query Match	60.6%;	Score 476;	DB 13;	Length 101;
Best Local Similarity	87.1%;	Pred. No. 1.1e-44;		
Matches 88;	Conservative	7;	Mismatches 6;	Indels 0; Gaps
Qy	20	PKRLYCNNGGFFLIARHPDGVYDGVREKSDPHIKLQLOAEERGVSIKGYCANRYLAKMED	79	
Db	1	PKRLYCNNGGFFLIARHPDGVYDGVREKSDPHIKLQLOAEERGVSIKGYCANRYLAKMED	60	
Oy	80	GRLLASKCVTDECFEFLRLSNNTYRSRKYTSYVALAKR	120	
Db	61	GRLLALAKMTTDECFEFLRLSNNTYRSRKYTSYVALAKR	101	
RESULT 12				
ID	007659	PRELIMINARY;	PRT;	146 AA.
AC	007659;			
DT	01-NOV-1996 (TrEMBLrel. 01, Created)			
DT	01-NOV-1996 (TrEMBLrel. 01, Last sequence update)			
DT	01-JUN-2001 (TrEMBLrel. 17, Last annotation update)			
DE	FIBROBLAST GROWTH FACTOR.			
GN	BFGF.			
OS	Gallus gallus (Chicken).			
CC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;			
CC	Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;			
OC	Gallus.			
OX	NCBI_TaxID=9031;			
RN	[1]			
RP	SEQUENCE FROM N.A.			
RX	MEDLINE=93246053; PubMed=7683281;			
RA	Borja A.Z., Zeller R., Meijers C.;			
RT	"Expression of alternatively spliced bFGF first coding exons and			
RT	antisense mRNAs during chicken embryogenesis.";			
RL	Dev. Biol. 157:110-118 (1993).			
RP	[2]			
RP	SEQUENCE OF 52-85 FROM N.A.			
RX	MEDLINE=90382254; PubMed=2401202;			
RA	Mitrani E., Gruenbaum Y., Shohat H., Ziv T.;			
RT	"Fibroblast growth factor during mesoderm induction in the early chick			
RT	embryo.";			
RL	Development 109:387-393 (1990).			
DR	EMBL: M95706; AAA48616.1; -			
DR	EMBL: X56804; CAA40139.1; -			
DR	HSSP: P09038; 4FGF.			
DR	InterPro: IPR002209; HBGF_FGF.			
DR	InterPro: IPR002348; IL1_HBGF.			
DR	pfam: PF00167; FGF_1			
DR	PRINTS; PR00262; IL1HBGF			
DR	ProDom: PD000831; HBGF_FGF; 1.			
DR	SMART; SM00442; FGF; 1.			
DR	PROSITE; PS00247; HBGF_FGF; 1.			
FT	NON_TER	1	1	
FT	NON_TER	101	101	
SO	SEQUENCE	101 AA;	11907 MM;	74A16C866C1F457A CRC64;

RT G to A on position 19 and transversion G to C on position 97."
RL Submitted (NOV-1999) to the EMBL/Genbank/DBJ databases.
DR EMBL: Y13468: CAA73868.1: "-
DR EMBL: A7250952: CAB61630.1: "-
DR HSSP: P09038: 1BFF.
DR InterPro: IPR002209: HBGF_FGF.
DR Pfam: PF00167: FGF; 1.
DR ProDom: PD000831: HBGF_FGF; 1.
FT NON_TER 114 114
SQ SEQUENCE 114 AA: 11688 MW: 98DC6381C1960CID CRC64;

Query Match 36.6%; Score 287; DB 4; Length 114;
Best Local Similarity 100.0%; Pred. No. 7.5e-24;
Matches 50; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 PALPEDGSGAGFPFGHFKDKRLCYCKNGGFFLRHPDGRVDGVRERKSDPH 50
|||||
DB 65 PALPEDGSGAGFPFGHFKDKRLCYCKNGGFFLRHPDGRVDGVRERKSDPH 114

Search completed: June 7, 2002, 14:46:13
Job time: 629 sec

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:35:33 ; Search time 93.91 seconds

(without alignments)
183.329 Million cell updates/sec

Title: US-09-802-365-6

Perfect score: 828

Sequence: 1 MAAGSITLPALEPDGSGA.....GPKTGPCKAILFLPMSAKS 155

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 747574 seqs, 111073796 residues

Total number of hits satisfying chosen parameters: 747574

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : A_Geneseq_032802.*
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2: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1981.DAT:*
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4: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1983.DAT:*
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11: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1990.DAT:*
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14: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1993.DAT:*
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18: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1997.DAT:*
19: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1998.DAT:*
20: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1999.DAT:*
21: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA2000.DAT:*
22: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA2001.DAT:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	828	100.0	155	8	AAp70671
2	828	100.0	155	22	AAE11975
3	825	99.6	155	18	AAW20029
4	817	98.7	155	8	AAp70301
5	817	98.7	155	10	AAp94038
6	817	98.7	155	11	AAp05314
7	817	98.7	155	13	AAp23232
8	817	98.7	155	14	AAp40159
9	817	98.7	155	16	AAp80777
10	817	98.7	155	16	AAp70204
11	817	98.7	155	16	AAp70823

12	817	98.7	155	18	AAW33338
13	817	98.7	155	18	AAW19595
14	817	98.7	155	19	AAV05456
15	817	98.7	155	19	AAW75712
16	817	98.7	155	19	AAW71379
17	817	98.7	155	19	AAW53023
18	817	98.7	155	20	AAW93380
19	817	98.7	155	21	AAW10298
20	817	98.7	155	21	AAV96873
21	817	98.7	155	21	AAV96893
22	817	98.7	155	21	AAV90411
23	817	98.7	155	21	AAV90448
24	817	98.7	155	21	AAV32334
25	817	98.7	155	22	AAW65648
26	817	98.7	155	22	AAE11976
27	817	98.7	155	22	AAW5813
28	817	98.7	155	22	AAW99918
29	817	98.7	155	22	AAW64317
30	817	98.7	155	22	AAW64847
31	817	98.7	155	22	AAW84597
32	817	98.7	155	22	AAW72909
33	817	98.7	155	22	AAW61662
34	817	98.7	155	22	AAW50274
35	817	98.7	157	8	AAp71085
36	817	98.7	158	18	AAW31664
37	817	98.7	158	22	AAW08594
38	817	98.7	158	22	AAW78316
39	817	98.7	158	22	AAU04006
40	817	98.7	165	11	AAW05787
41	817	98.7	210	11	AAW06885
42	817	98.7	210	22	AAW60695
43	817	98.7	210	22	AAW50299
44	817	98.7	210	22	AAW50706
45	817	98.7	211	11	AAW07076

ALIGNMENTS

RESULT 1	
AAp70671	
ID AAp70671	standard; Protein; 155 AA.
AC AAp70671;	
XX	
DT 18-APR-1991	(first entry)
XX	
DE	Sequence of bovine basic fibroblast growth factor (FGF).
XX	
KW	Wound healing; tissue repair; tumour probe.
XX	
OS	Bos taurus.
XX	
FH	Key
FT	Peptide
FT	Protein
XX	
PN	W08701728-A.
XX	
PD	26-MAR-1987.
XX	
PF	11-SEP-1986;
XX	86WO-US01879.
PR	30-MAY-1986;
PR	12-SEP-1985;
PR	16-DEC-1985;
XX	86US-0869382.
XX	85US-077521.
PA	(BIOT-) BIOTECN RES PARTNE.
XX	
PI	Fiddes JC, Abraham JA;
XX	
XX	WPI; 1987-093786/13.
DR	N-PSDB; AAN71024.

Human fibronectin
Biologically active
Fibronectin recept
Fibroblast growth
18 kDa form of fib
Fibroblast growth
18 kD isoform of h
Fibroblast growth
Human fibroblast g
Human fibroblast g
FGF-2 (bFGF), SEQ
Human FGF-2 (bFGF)
Human fibroblast g
Human fibroblast g
Human fibroblast g
Human FGF-2 protei
Human FGF-2 protei
Heart muscle cell
Amino acid sequenc
Truncated form of
FGF2 protein. Hom
Human basic fibrob
Sequence of human
Leaderless protein
Human basic fibrob
Human basic fibrob
human fibroblast g
human fibroblast g
Human bFGF encoded
Recombinant basic
Human basic fibrob
Human fibroblast g
Human fibroblast g
Extended recombin

```
XX New DNA sequences encoding mammalian fibroblast growth factors -
PT useful in prohn. of pure factors for use in wound healing and
PT tissue repair and of probe for tumour testing
XX
PS Claim 11; Fig 3; 89pp; English.
XX
CC The N-terminal AA sequence of both acidic and basic bovine FGF are
CC used to construct long probes to screen human and bovine genomic
CC libraries for FGF genes. Isolated sequences are used in vector
CC construction etc. and used to transform CV-1 cells for FGF prodn.
XX
SQ Sequence 155 AA:

Query Match 100.0%; Score 828; DB 8; Length 155;
Best Local Similarity 100.0%; Pred. No. 9,2e-83;
Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAGSITTLPALPEDGSGAPPFGHFKDPRKLYCKNGFFLRHPDGRVDGVREKSDPHI 60
   |||||||
DB 1 maagsttlpalpedgsgafppghfkdpkrlyckngfflrhpdyrvdyvrekspdh 60
   |||||||
QY 61 KIQQAEEGVSSTIGVCANRYLAMKEDGRLLASKCVDECFEERLESNNNTYRSRY 120
   |||||||
DB 61 KIQQAEEGVSSTIGVCANRYLAMKEDGRLLASKCVDECFEERLESNNNTYRSRY 120
   |||||||
QY 121 SSMYVALKRTGQYKLGPKTGPQKAILFLPMSAKS 155
   |||||||
DB 121 ssmvalkrtgqyklgpktgpgqkallflpmsaks 155
   |||||||

RESULT 2
AAE11975
ID AAE11975 standard; Protein; 155 AA.
XX
AC AAE11975;
XX
DT 18-DEC-2001 (first entry)
XX
DE Bovine fibroblast growth factor-2 (FGF-2) #2.
XX
KM Bovine; therapy; erectile dysfunction; fibroblast growth factor-2; FGF-2;
KM epidermal growth factor; EGF; platelet derived growth factor; PDGF;
KM vascular endothelial growth factor; VEGF; tissue growth factor; TGF;
XX
OS Impotence; vasotrophic.
XX
OS Bos taurus.
XX
PN WO200168125-A2.
XX
PD 20-SEP-2001.
XX
PF 09-MAR-2001; 2001WO-US07702.
XX
PR 10-MAR-2000; 2000US-188480P.
PR 11-MAY-2000; 2000US-203415P.
XX
PA (CHIR ) CHIRON CORP.
XX
PI Whitehouse MJ;
XX
DR WPI; 2001-616273/71.
DR N-PSDB; AAD19522.
XX
PT Treating or preventing erectile dysfunction, comprises administering
PT growth factor, particularly fibroblast growth factor to blood vessels
PT in the penis, groin or leg
XX
PS Claim 6; Page 33; 35pp; English.
XX
CC The present invention relates to a method for treating or preventing
CC erectile dysfunction, comprising administering a fibroblast growth
```

```
CC factor (FGF), epidermal growth factor (EGF), platelet derived growth
CC factor (PDGF), vascular endothelial growth factor (VEGF) or tissue
CC growth factor (TGF). The invention is used to treat or prevent erectile
CC dysfunction, or impotence. The present sequence is a bovine FGF-2
CC protein.
XX
SQ Sequence 155 AA:

Query Match 100.0%; Score 828; DB 22; Length 155;
Best Local Similarity 100.0%; Pred. No. 9,2e-83;
Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAGSITTLPALPEDGSGAPPFGHFKDPRKLYCKNGFFLRHPDGRVDGVREKSDPHI 60
   |||||||
DB 1 maagsttlpalpedgsgafppghfkdpkrlyckngfflrhpdyrvdyvrekspdh 60
   |||||||
QY 61 KIQQAEEGVSSTIGVCANRYLAMKEDGRLLASKCVDECFEERLESNNNTYRSRY 120
   |||||||
DB 61 KIQQAEEGVSSTIGVCANRYLAMKEDGRLLASKCVDECFEERLESNNNTYRSRY 120
   |||||||
QY 121 SSMYVALKRTGQYKLGPKTGPQKAILFLPMSAKS 155
   |||||||
DB 121 ssmvalkrtgqyklgpktgpgqkallflpmsaks 155
   |||||||

RESULT 3
AAW20029
ID AAW20029 standard; Protein; 155 AA.
XX
AC AAW20029;
XX
DT 18-SEP-1997 (first entry)
XX
DE Recombinant bovine basic fibroblast growth factor.
XX
KM FGF; fibroblast growth factor; basic; acidic; wound healing;
KM neurodegenerative disease; Parkinson's; Alzheimer's disease;
KM bone fracture; biologically active; embolism.
XX
OS Bos taurus.
XX
FH Key
FH Peptide 1.9
FT /label= sig_peptide
FT Protein 10..155
FT /label= mat_protein
XX
PN US5604293-A.
XX
PD 18-FEB-1997.
XX
PF 12-SEP-1985; 85US-0775521.
XX
PR 15-MAY-1987; 87US-0050706.
PR 12-SEP-1985; 85US-0775521.
PR 16-DEC-1985; 85US-0809163.
PR 30-MAY-1986; 86US-0869382.
PR 30-MAR-1992; 92US-0860688.
PR 01-APR-1994; 94US-0221462.
XX
PA (SCIO-) SCIOS INC.
XX
PI Abraham JA, Fiddes JC;
XX
DR WPI; 1997-234676/21.
DR N-PSDB; AAT71236.
XX
PT New high purity, recombinant human basic fibroblast growth factor -
PT for promoting wound healing and treating neurodegenerative
PT diseases, suitable for production on large scale
XX
PS Example 5; Fig 3; 34pp; English.
```

XX AAW20029 is a recombinant bovine basic fibroblast growth factor (bFGF).
CC Recombinant bFGF is used to promote healing of wounds, bone fractures,
CC damaged myocardial tissue etc. and, since it increases neuronal
CC survival and promotes neurite outgrowth, may also be used in treatment
CC of neurological disorders such as Alzheimer's and Parkinson's diseases.
CC bFGF may also be used for detection of specific inhibitors; for
CC treatment of cell cultures in vitro before transplant and for inducing
CC release of tissue plasminogen activator or collagenase, e.g. for
CC treatment of a chronic tendency to form embolism. Recombinant bFGF can
CC be produced on a large scale.

XX Sequence 155 AA;

Query Match 99.6%; Score 825; DB 18; Length 155;
Best Local Similarity 99.4%; Pred. No. 2e-82;
Matches 154; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

OY 1 MAGSITTLPALPEDGSGAPPGHFKDKRLCYCKNGGFELRHDPGRVDGVREKSDPHI 60
DB 1 maagsitltpalpedsqgsaifppghfkdkrlycknggfelfrhpgrvdgvreksdphl 60
OY 61 KIQQAEEERGVSISIGVCANRYLAMKEDRLASKCVTDECFEFERLESNNNTYRSRKY 120
DB 61 kIQqaeeergvvsikgvcanylamkedgrllaskcvtdceffferlesnnytyrsky 120
OY 121 SSMYVALKRTGQYKLGPKTGPQKAILFLPMSAKS 155
DB 121 ssmYvalkrtgqyklgpktpgqkailflpmsaks 155

RESULT 4

AAP70301
ID AAP70301 standard; Protein; 155 AA.

XX AAP70301;

DT 05-JUN-1991 (first entry)

XX Sequence of human basic fibroblast growth factor (hbFGF).

XX Fibroblast growth promoter; mesoderm cell growth promoter;
KW wound healing.

XX Homo sapiens.

XX Key Location/Qualifiers

FT Peptide 1..9

FT Protein 10..155

FT /note="claimed"

XX EP237966-A.

XX 23-SEP-1987.

PF 12-MAR-1987; 87EP-0103601.

XX 29-SEP-1986; 86JP-0231428.

PR 14-MAR-1986; 86JP-0057919.

PR 09-APR-1986; 86JP-0082699.

PR 09-OCT-1986; 86JP-0241053.

XX (TAKE) TAKEDA CHEMICAL IND KK.

XX Kurokawa T, Sasada R, Igarashi K;
XX WPI; 1987-265363/38.
XX N-PSDB; AAN70494.

XX Human basic fibroblast growth factor - produced by recombinant
PT DNA techniques, useful for healing wounds, prophylaxis,
PT thrombosis and arteriosclerosis treatment, etc.

XX Disclosure; Fig 1; 38pp; English.

XX hbFGF is produced using cDNA prep. from RNA isolated from M138 or
CC IMR90 human fibroblasts. hbFGF promotes growth of fibroblasts and
CC other mesoderm-derived cells and is useful for promoting healing of
CC wounds (eg burns), for prophylaxis and treatment of thrombosis and
CC arteriosclerosis, and as a promoter for cell culture.

XX Sequence 155 AA;

Query Match 98.7%; Score 817; DB 8; Length 155;
Best Local Similarity 98.7%; Pred. No. 1.5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY 1 MAGSITTLPALPEDGSGAPPGHFKDKRLCYCKNGGFELRHDPGRVDGVREKSDPHI 60
DB 1 maagsitltpalpedsqgsaifppghfkdkrlycknggfelfrhpgrvdgvreksdphl 60
OY 61 KIQQAEEERGVSISIGVCANRYLAMKEDRLASKCVTDECFEFERLESNNNTYRSRKY 120
DB 61 kIQqaeeergvvsikgvcanylamkedgrllaskcvtdceffferlesnnytyrsky 120
OY 121 SSMYVALKRTGQYKLGPKTGPQKAILFLPMSAKS 155
DB 121 ssmYvalkrtgqyklgsktpgqkailflpmsaks 155

RESULT 5

AAP4038
ID AAP4038 standard; Protein; 155 AA.

XX AAP4038;

DT 25-JUN-1990 (first entry)

XX Human basic fibroblast growth factor.

XX Basic fibroblast growth factor; pUC9-TSFl; pUC9delH3-PTSF-3.

XX Homo sapiens.

XX Key Location/Qualifiers

FT Misc-difference 78

FT /label=Cys

FT /note="Replaced by Ser or Ala"

FT Misc-difference 96

FT /label=Cys

FT /note="Replaced by Ser or Ala"

FT Misc-difference 128

FT /label=Lys

FT /note="Replaced by Ser or Glu"

FT Misc-difference 129

FT /label=Arg

FT /note="Replaced by Thr"

FT Misc-difference 138

FT /label=Lys

FT /note="Replaced by Ser"

FT Domain 128..138

FT /label=heparin-binding domain

XX EP298723-A.

XX 11-JAN-1989.

PF 06-JUL-1988; 88EP-0306158.

PR 07-JUL-1987; 87US-0070797.

XX (BIOT-) BIOTECN RES ASSOC.

XX Fiddes JC, Abraham JA, Protter A;

```

XX WPI; 1989-009785/02.
DR N-PSDB; AAN93087.
XX
PT Recombinant DNA encoding new fibroblast growth factor
PT analogues - useful eg for accelerating wound healing and
PT to control neovascularisation.
XX
XX Disclosure; d 1-2; 44pp; English.
XX
CC DNA encoding the sequence may be mutated to encode an analogue, of human
CC basic fibroblast growth factor (bFGF) bFGF-C78/96S, which has reduced
CC affinity for heparin. One or more positively-charged AAs in the heparin-
CC binding domain (AAs 128-138) are replaced by neutral or negatively-
CC charged residues as indicated in the feature table. A recombinant vector
CC (pUC9-TSE11 or pUC9delH3-PTSE-3) contg. the mutated DNA can be used to
CC transform bacterial or mammalian host cells for prodn. of the analogue.
CC See also AAN94038.
XX
XX Sequence 155 AA;
SQ

```

```

Query Match 98.7%; Score 817; DB 10; Length 155;
Best Local Similarity 98.7%; Pred. No. 1,5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

```

```

QY 1 MAAGSITTLPALPBDGSGAPFPGHFKDPKRLYCKNGGFLRIHPDGRVDGVRKSDPHI 60
   |||||||
Db 1 maagsitllpalpedgsgafppghfkdpkrlcycknggflrllpdpgrvdgvrksdphl 60
QY 61 KLGQAEEGVVSIKGCANRYLAKMEDGRLLASCVTDECFEERLESNNYNTYRSRKY 120
   |||||||
Db 61 klqqaeeergvvsikgcanylamlkedgrllaskvcvdecffferlesnnyntyrsky 120
QY 121 SSWYVALKRTGQYKLGPRKTPGOKAILFLPMSAKS 155
   :|||||
Db 121 tswwyvalkrtgqyklgsktgpqgkailflpmsaks 155

```

```

RESULT 6
AAR05314
ID AAR05314 standard; protein; 155 AA.
XX
AC AAR05314;
XX
DT 10-OCT-1990 (first entry)
XX
DE Human basic fibroblast growth factor (bFGF).
XX
KW Fibroblast growth factor; FGF; yeast; ischaemia; ds.
XX
OS Synthetic.
XX
PN WO9005184-A.
XX
PD 17-MAY-1990.
XX
PE 03-NOV-1989; 89WO-0004821.
XX
PR 04-NOV-1988; 88US-0267408.
XX
PA (CHIR-) CHIRON CORP.
XX
PI Barr PJ;
XX
PI WPI; 1990-178825/23.
XX
DR N-PSDB; AAO04716.
XX

```

```

PT yeast prodn. of human basic and acidic fibroblast growth factor -
PT with acetylated amino-terminal, useful eg. for treating cell
PT senescence, neuronal regression and cell death.
XX
PS Disclosure; ; P; English.

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```

XX FGF have applications such as in vivo nerve regeneration, wound
CC repair ischaemia and corneal repair. They may also have therapeutic
CC uses in the CNS and PNS in treatment of cell death and neuronal
CC regression.
XX
XX Sequence 155 AA;
SQ

```

```

Query Match 98.7%; Score 817; DB 11; Length 155;
Best Local Similarity 98.7%; Pred. No. 1,5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

```

```

QY 1 MAAGSITTLPALPBDGSGAPFPGHFKDPKRLYCKNGGFLRIHPDGRVDGVRKSDPHI 60
   |||||||
Db 1 maagsitllpalpedgsgafppghfkdpkrlcycknggflrllpdpgrvdgvrksdphl 60
QY 61 KLGQAEEGVVSIKGCANRYLAKMEDGRLLASCVTDECFEERLESNNYNTYRSRKY 120
   |||||||
Db 61 klqqaeeergvvsikgcanylamlkedgrllaskvcvdecffferlesnnyntyrsky 120
QY 121 SSWYVALKRTGQYKLGPRKTPGOKAILFLPMSAKS 155
   :|||||
Db 121 tswwyvalkrtgqyklgsktgpqgkailflpmsaks 155

```

```

RESULT 7
AAR22232
ID AAR22232 standard; protein; 155 AA.
XX
AC AAR22232;
XX
DT 23-JUN-1992 (first entry)
XX
DE bFGF truncated at its N-terminus.
XX
KW Basic fibroblast growth factor; adduct; heparin; heparan sulphate;
KW pepsin A; cathepsin D; wounds; burns.
XX
OS Synthetic.
XX
PN WO9202539-A.
XX
PD 20-FEB-1992.
XX
PE 30-JUL-1991; 91WO-EP01428.
XX
PR 02-AUG-1990; 90GB-0017008.
XX
PA (FARM ) FARMITALIA C ERBA SRL.
XX
PI Monsan P, Paul F, Betbeder D, Sarmientos P;
XX
PI WPI; 1992-080021/10.
XX

```

```

PT Prepn. of basic fibroblast growth factor - by forming adduct with
PT heparin or heparan sulphate and cleaning with pepsin A or
PT cathepsin D
XX
PS Claim 4; Page 27; 36pp; English.
XX

```

```

CC The peptide sequence was deduced from the synthetic DNA sequence
CC prepd. as described in EP-363675. E. coli cells transformed with the
CC synthetic DNA were lysed and the supernatant purified, giving a
CC 50:50 mixture of a 154 residue bFGF (2-155) having the amino acid
CC sequence of the 155 residue form (Abraham et al., Science, 233, 545-
CC 548, 1986) shown here but without the N-terminal Met; and a 153
CC residue bFGF (3-155). An adduct of bFGF formed with heparin or
CC heparan sulphate contg. the bFGF 9-10 Leu-Pro bond can be cleaved
CC with pepsin A or cathepsin D to cleave this bond and release a
CC peptide with the N-terminus be deleted up to and including residue
CC 9, sequentially. This cleavage method can be used to obtain a pure
CC form of the 146 amino acid bFGF (10-155) bFGF. The prodn. can be used

```

CC	to treat wounds and burns.
CC	See also AAR22233.
XX	
SQ	Sequence 155 AA;

Query Match	98.7%;	Score 817;	DB 13;	Length 155;
Best Local Similarity	-98.7%;	Pred. No. 1.5e-81;		
Matches 153; Conservative	1;	Mismatches	1;	Indels 0; Gaps 0;

Oy	1	MAASITTLPALPEDGSSGAFFPENGHDOPRICKKNGGFFLRHPDORVGVGEKSOPHI	60
		1	1
		1	1
		1	1
Db	1	maagsitclpalpedgsggaifpghfkdprrlycknggffllrhpqrdvadvreksdphl	60
Oy	61	KILOIAEERGVSTIKGCANRYLAMKEDGGLLASKCYTDGCFEERLESNNYTSRKY	120
		1	1
		1	1
		1	1
Db	61	kldqgeergrvstkygcannrylamkcdgqlasckrtcdcefferlesmynltsrky	120
Oy	121	SSRIVALKRRGQYKLGPKRTGPGKAILFLFMSAKS	155
		1	1
		1	1
		1	1
Db	121	tsuyvalkrctgqyklsgktcpgpgkallflfmsaks	155

Query Match	98.7%	Score 817	DB 14	Length 155
Best Local Similarity	98.7%	Pred. No. 1.5e-81		
Matches 153	Conservative 1	Indels 0	Gaps 0	
QY	1	MAASITTLPALPEDGSGAEPFGFKPKRLXCNGSGFLRIHPDGRVDGVRKSDPHI	60	

Matches	153: Conservative	1: Mismatches	1: Indels	0: Gaps	0:
OY	1	MAAGSITTLPALPEDGSGAPPPGHFKODPKRLYCKNKGFFELRIHPDGRVDGVRKESDPHI	60		
Db	1	maagsittlpaipedgsgaifppghfkdkrllycknggfflirlnpddgrvdgvrksdphi	60		
OY	61	KIOLAEERGVSIGVCANRYLAKKEGRLASKCVDCEFFERLESNNNTYRSRY	120		
Db	61	kilqlaeeergvsvikgvcanrylankedgrllaskcvlceffierlesnnytyrsky	120		
OY	121	SSWYVALKRTGQYKLGPRTPGQKAILFLPMSAKS	155		
Db	121	tswyvalkrtgqyklgsktgpqkailflpmsaks	155		
<p>RESULT 10</p> <p>AAR70204</p> <p>AAAR70204 standard; Protein: 155 AA.</p>					
AC	AAAR70204;				
DT	21-SEP-1995 (first entry)				
DE	Human bFGF.				
KW	Basic fibroblast growth factor; bFGF; blood-brain barrier; neuronal precursor cell; neurological agent.				
OS	Homo sapiens.				
PN	W0507092-A.				
PD	16-MAR-1995.				
PF	11-AUG-1994; 94WO-US09155.				
PR	10-SEP-1993; 93US-0118822.				
XX	22-DEC-1993; 93US-0171297.				
PA	(UYNE-) UNITV NEW JERSEY.				
PI	Black IB, Diclcco-Bloom E;				
DR	WPI, 1995-123234/16.				
DR	N-PSDB; AAQ83522.				
PT	New conjugates for crossing the blood brain barrier - comprising a neurotrophic agent linked to a transport factor comprising at least a portion of a growth factor				
PS	Disclosure; Fig.1; 53pp; English.				
CC	Growth and/or proliferation of neuronal precursor cells in an animal is obtained by admin. of a proliferation factor comprising at least a portion of a growth factor, e.g. human basic fibroblast growth factor, whose sequence is given in AAR70204 and gene in AAQ83522.				
Sequence	155 AA;				
Query Match	98.7%; Score 817; DB 16; Length 155;				
Best Local Similarity	98.7%; Pred. No. 1.5e-81;				
Matches 153: Conservative	1; Mismatches 1; Indels 0; Gaps 0;				

```

Db      121 tsmyvalkrtgqyklgsctgpqgakallflpmasaks 155
          :|||||
RESULT  11
AA070823
ID      AAR70823 standard; protein; 155 AA.
XX
AC      AAR70823;
XX
DT      01-SEP-1995 (first entry)
XX
DE      FGF-2.
XX
KW      FGF-2; fibroblast growth factor; cytotoxic conjugate; fusion protein;
KW      saporin; cytostatic; tumor; diabetes; rheumatoid arthritis.
XX
OS      Homo sapiens.
XX
PN      W09503831-A.
XX
PD      09-FEB-1995.
XX
PF      27-JUL-1994; 94WO-US08511.
XX
PR      02-AUG-1993; 93US-0099924.
PR      29-OCT-1993; 93US-0145829.
PA      (PRIZ-) PRIZM PHARM INC.
PA      (WHIT-) WHITTIER INST' DIABETES & ENDOCRINOLOGY.
PI      Baird AJ, Lappi DA, Sosnowski BA;
PI      WPT; 1995-082038/11.
XX
DR      New monogenous preparations of cytotoxic conjugates and DNA -
XX      contain fibroblast growth factors and cytotoxic agents for
XX      treating FGF conditions such as tumours, diabetes and rheumatoid
XX      arthritis.
XX
PS      Disclosure: Page 109-110; 128pp; English.
XX
CC      Novel fusion proteins comprise FGF linked to saporin. FGF-1 to -9
CC      may be used, pref. mutants in which at least 1 Cys residue is
CC      replaced by conservative Ser substitutions. The fusion proteins
CC      are potent cytocidal agents to cells bearing the FGF receptor.
XX
SQ      Sequence 155 AA:

Query Match           98.7%; Score 817; DB 16; Length 155;
Best Local Similarity 98.7%; Pred. No.1.5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0.

QY      1 MAAGSITTLPALPEDGSGAFPFGFKDPKRLDYCRNNGFFLRIRHPDGRVDGYREKSDPHI 60
       |||||
DB      . 1 maagsitlpaipedgsgafppghfkdpkrlcyckngffllrhpdyrvdyreksdpi 60
       |||||

QY      61 KIQLQAEEFEGVSVISIGVCANRILAKEDGRLLASKCVDCECFEERLESNNNTYRSRY 120
       |||||
DB      61 kqlqaeeegvsvisigvcanyrlamkedgrllaskcvidecfeerleannynlyrszky 120
       |||||

QY      121 SSMVALKRTGOYKLGPKTGPGOKAILFLPMSAKS 155
       :|||||
DB      121 tsmyvalkrtgqyklgsctgpqgakallflpmasaks 155
       |||||

RESULT  12
AAW33338
ID      AAW33338 standard; protein; 155 AA.
XX
AC      AAW33338;
XX

```


DT 23-FEB-1998 (first entry)
XX Human fibronectin amino-terminal oligopeptide.
DE
XX
XX Amino-terminal; human fibronectin; target cell;
KW transfection; retroviral vector; gene therapy; cancer;
XX viral disease; acquired immunodeficiency syndrome; AIDS.
OS
XX Homo sapiens.
XX
XX W09718318-A1.
XX
XX 22-MAY-1997.
XX
XX 07-NOV-1996; 96MO-JF03254.
XX
XX 08-MAR-1996; 96JP-0051847.
XX 13-NOV-1995; 95JP-0294382.
XX (TAKI) TAKARA SHUZO CO LTD.
XX
XX Asada K, Hashino K, Kato I, Koyama N, Uemori T;
PI Ueno T;
XX
XX WPI; 1997-289294/26.
XX
XX Method for increasing efficacy of gene transfer to target cell using
PT retrovirus - by infection of the target cell in the presence of a
PT substance which binds to the virus and a substance which binds to
PT the target cell
XX
XX Claim 41; Pages 93-94; 194pp; Japanese.
XX
XX The present sequence is a human fibronectin amino-terminal
CC oligopeptide, which was used in the development of a novel method
CC for increasing the efficiency of gene introduction into a target
CC cell using a retroviral vector. The method comprises carrying out
CC viral infection of the target cell in the presence of a retrovirus
CC and target cell binding substance or substances. The method can be
CC used to effectively introduce genes into target cells for the gene
CC therapy of cancer and viral diseases, e.g. AIDS.
XX
XX Sequence 155 AA:
SQ

Query Match 98.7%; Score 817; DB 18; Length 155;
Best Local Similarity 98.7%; Pred. No. 1.5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGSGAFPPGHFKDPKRLYCKNGCFLLRIHPDGRVDGVRKSPHI 60
DB 1 maagsittlpalpedgsgafppghfkdpkrllyckngfflrihpdgrvdgvrksdphi 60

QY 61 KLOLQAEERGVSVIKGYCANRYLAMKEDGRLLASKVYDECFEERLESNNYNTYRSRKY 120
DB 61 klqgaeergvsvikgycanrylamkedgrllaskvctdeeffeersnnyntyrsky 120

QY 121 SSWYVALKRTGQYKLGPKTGPQKAILFLPMSAKS 155
DB 121 tswyvalkrtgqyklgsktgpqkailflpmsaks 155

RESULT 13
AAW19595
ID AAW19595 standard; Protein; 155 AA.
XX
XX AAW19595;
XX
XX 18-SEP-1997 (first entry)
XX
XX Biologically active recombinant basic fibroblast growth factor.
XX FGF; fibroblast growth factor; basic; acidic; wound healing;
KW

KW neurodegenerative disease; Parkinson's; Alzheimer's disease;
KW bone fracture; biologically active; embolism.
XX
XX Homo sapiens.
XX
XX Key Location/Qualifiers
FH Peptide 1..9
FT /label= sig-peptide
FT Protein 10..155
FT /label= mat_protein
XX
XX US5604293-A.
XX
XX 18-FEB-1997.
XX
XX 12-SEP-1985; 85US-0775521.
XX
XX 15-MAY-1987; 87US-0050706.
XX 12-SEP-1985; 85US-0775521.
XX 16-DEC-1985; 85US-0809163.
XX 30-MAY-1986; 86US-0869382.
XX 30-MAR-1992; 92US-0860688.
XX 01-APR-1994; 94US-0221462.
XX
XX (SCIO-) SCIOS INC.
XX
XX Abraham JA, Fiddes JC;
PI WPI; 1997-234676/21.
XX N-PSDB; AAT71231.
XX
XX New high purity, recombinant human basic fibroblast growth factor -
PT for promoting wound healing and treating neurodegenerative
PT diseases, suitable for production on large scale
XX
XX Claim 2; Fig 4; 34pp; English.
XX
XX AAW19595 is a biologically active recombinant human basic fibroblast
CC growth factor (bFGF). The protein is free from all infectious
CC impurities, substances that normally accompany it and from
CC post-translational modification of Cys residues of native human bFGF.
CC Recombinant bFGF is used to promote healing of wounds, bone fractures,
CC damaged myocardial tissue etc. and, since it increases neuronal survival
CC and promotes neurite outgrowth, may also be used in treatment of
CC neurological disorders such as Alzheimer's and Parkinson's diseases. bFGF
CC may also be used for detection of specific inhibitors; for treatment of
CC cell cultures in vitro before transplant and for inducing release of
CC tissue plasminogen activator or collagenase, e.g. for treatment of a
CC chronic tendency to form embolism. Recombinant bFGF can be produced on a
CC large scale.
XX
XX Sequence 155 AA:
SQ

Query Match 98.7%; Score 817; DB 18; Length 155;
Best Local Similarity 98.7%; Pred. No. 1.5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGSGAFPPGHFKDPKRLYCKNGCFLLRIHPDGRVDGVRKSPHI 60
DB 1 maagsittlpalpedgsgafppghfkdpkrllyckngfflrihpdgrvdgvrksdphi 60

QY 61 KLOLQAEERGVSVIKGYCANRYLAMKEDGRLLASKVYDECFEERLESNNYNTYRSRKY 120
DB 61 klqgaeergvsvikgycanrylamkedgrllaskvctdeeffeersnnyntyrsky 120

QY 121 SSWYVALKRTGQYKLGPKTGPQKAILFLPMSAKS 155
DB 121 tswyvalkrtgqyklgsktgpqkailflpmsaks 155

RESULT 14
AAW05456

```

ID  AAY05456 standard; protein; 155 AA.
XX
AC  AAY05456:
XX
DT  07-JUL-1999 (first entry)
XX
DE  Fibronectin receptor targeting HIV strain CH-271.
XX
KM  Fibronectin receptor; HIV; infection; therapy.
XX
OS  Unidentified.
XX
PN  JPI0029952-A.
XX
PD  03-FEB-1998.
XX
PF  16-JUL-1996; 96JP-0185893.
XX
PR  16-JUL-1996; 96JP-0185893.
XX
PA  (TAKI ) TAKARA SHUZO CO LTD.
XX
DR  WPI; 1998-163674/15.
XX
PT  Control of human immunodeficiency virus infection - using
XX  composition comprising replication defective HIV vector
XX
PS  Disclosure; Page 17; 24pp; Japanese.
XX
CC  This sequence represents a fibronectin receptor that can be used in
CC  the method of the invention. The method is for the control of human
CC  immunodeficiency virus (HIV) infection using a composition which
CC  comprises a functional substance which participates in the infection of
CC  HIV. The method is used to control HIV-infection.
XX
SQ  Sequence 155 AA:

Query Match          98.7%; Score 817; DB 19; Length 155;
Best Local Similarity 98.7%; Pred. No. 1.5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY  1 MAAGSITTLPALPEDGSGAAPPFGHFKDPKRLYCKNGGFFLRHPDGVGVDSRKSDFHI 60
    1 maagsittlpalpedsdgsgaifpgfhfkdpkrlklycknggfflrhpdgvgdvgsrksdph 60
DB  61 KIQQAEEGVSVIKGYCANRYLAKMKEDGRLLASKCVTDECFPERLESNNYNTYRSRKY 120
    61 kllqqaeeergvsvikgycanrylamkedgrllaskcvldecifperlesnnyntyrstky 120
OY  121 SSMYVALKRTGQYKLGPTGPGOKAILFLPMsAKS 155
    :|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB  121 tsyvalkrtgqyklgsktgpqkailflpmsaks 155

RESULT 15
AAW75712
ID  AAW75712 standard; Protein; 155 AA.
XX
AC  AAW75712:
XX
DT  07-DEC-1998 (first entry)
XX
DE  Fibroblast growth factor-2.
XX
KM  Fibroblast growth factor-2; FGF-2; basic fibroblast growth factor;
XX  bFGF; muten; protein engineering; heparin; thrombosis;
XX  thrombocytopenia; ophthalmic disorder; human; therapy.
XX
OS  Homo sapiens.
XX
FH  Key Location/Qualifiers
FT  Peptide 1..9

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```

FT  /label= Sig_peptide
FT  /note="amino acid residues -9 to -1"
FT  Protein
FT  10..155
FT  /label= Mat.protein
FT  /note="amino acid residues +1 to +145"
FT  Misc-difference 95
FT  /note="Phe-95 is replaced by another amino acid
FT  acid (Claim 3), preferably Ala, Phe, Ser,
FT  Gly, Met, Leu or Tyr, especially Ala, Gly
FT  or Ser"
FT  Misc-difference 96
FT  /note="Glu-96 may be replaced by another amino
FT  acid (Claim 7), preferably Ala, Gly or Ser"
FT  Misc-difference 101
FT  /note="Asn-101 may be replaced by another amino
FT  acid (Claim 2), preferably Ala, Phe, Ser,
FT  Gly, Met, Leu or Tyr, especially Ala, Gly
FT  or Ser"
FT  Misc-difference 104
FT  /note="Asn-104 may be replaced by another amino
FT  acid (Claim 1), preferably Ala, Phe, Ser,
FT  Gly, Met, Leu or Tyr, especially Ala, Gly
FT  or Ser"
XX  WC9839436-A2.
XX  11-SEP-1998.
XX  03-MAR-1998; 98WO-JP00878.
XX  03-MAR-1997; 97US-0040785.
XX  (EISA ) EISAI CO LTD.
XX
PI  Kalyanaraman R, Kaval T, Zhu H;
XX  WPI; 1998-495843/42.
XX  N-PSDB; AAV47647.
XX
PT  Fibroblast growth factor muten and DNA - having reduced receptor
XX  binding and able to bind heparin, useful for treating and regulating
XX  heparin-related disorders e.g. thrombosis
XX
PS  Disclosure; Page 53; 71pp; English.
XX
CC  This is the amino acid sequence of fibroblast growth factor-2
XX  (FGF-2), or basic fibroblast growth factor (bFGF). Claimed DNA
XX  molecules of the invention encode FGF muten polypeptides (see
XX  AAW75711-20) that show reduced FGF receptor binding activity but
XX  which retain the ability to bind heparin. For FGF-2, amino acid
XX  residues 95, 101 or 104 are preferably replaced by other amino acid
XX  residues, with an optional further replacement of the Glu-96
XX  residue. The muten may be further modified by replacement of the
XX  Cys-78 and Cys-96 residues to reduce aggregation. The muten
XX  is obtained by site-specific or site-directed mutagenesis of FGF-2
XX  DNA, incorporation of the mutated DNA into a vector and expression
XX  in host cells. The FGF mutens are used to treat heparin-related
XX  disorders, such as excessive bleeding induced by heparin,
XX  ophthalmic disorders and heparin-associated thrombocytopenia and
XX  thrombosis. They may also be used for drug design, especially
XX  FGF-2 antagonists.
XX
SQ  Sequence 155 AA:

```

```

OY  1 MAAGSITTLPALPEDGSGAAPPFGHFKDPKRLYCKNGGFFLRHPDGVGVDSRKSDFHI 60
    1 maagsittlpalpedsdgsgaifpgfhfkdpkrlklycknggfflrhpdgvgdvgsrksdph 60
DB  61 KIQQAEEGVSVIKGYCANRYLAKMKEDGRLLASKCVTDECFPERLESNNYNTYRSRKY 120
    61 kllqqaeeergvsvikgycanrylamkedgrllaskcvldecifperlesnnyntyrstky 120

Query Match          98.7%; Score 817; DB 19; Length 155;
Best Local Similarity 98.7%; Pred. No. 1.5e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

```

QY 61 KLOQAEBRGVSTIKVCANRYLAKEDGRLASKCVTDECFFPERLESNNYNTYRSRKY 120
Db 61 klqlqaeerqyvsikgycaanylamkedgrllaskcvldecffferlesnnyncyrsrky 120
QY 121 SSWYVALKRTGQYKLGPKTGPQKAILFLPMsAKS 155
Db 121 tswwyvalkrtgqyklysktgpqkailflpmaks 155

Search completed: June 7, 2002, 14:35:40
Job time: 277 sec

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:37:15 ; Search time 47.03 Seconds
(without alignments)
316.688 Million cell updates/sec

Title: US-09-802-365-6

Perfect score: 828

Sequence: 1 MAAGSITTLPALPEDGSGA.....GPKTGPQAKILFLPMSAKS 155

Scoring table: BIOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283138 seqs, 96089334 residues

Total number of hits satisfying chosen parameters: 283138

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database :
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	828	100.0	157	1	GKBOB
2	817	98.7	210	2	A32398
3	796.5	96.2	154	2	A31674
4	781.5	94.4	154	2	C37360
5	781	94.3	146	1	S00185
6	770	93.0	189	2	A48834
7	758.5	91.6	164	2	S31622
8	736	88.9	137	2	I46711
9	685	82.7	155	1	A40117
10	466.5	56.3	125	2	A32484
11	427.5	51.6	155	1	A60721
12	419.5	50.7	155	2	A60130
13	418.5	50.5	155	1	A33665
14	413.5	49.9	155	2	S04147
15	413.5	49.9	155	2	D37360
16	412.5	48.9	152	2	JH0476
17	404.5	48.6	155	2	JW0055
18	402.5	48.6	155	1	GKBOA
19	262	31.6	194	1	I50710
20	252.5	30.5	206	1	TVHMH5
21	252	30.4	256	2	JC4627
22	250.5	30.3	264	2	A36207
23	250.5	30.3	266	2	S68144
24	249	30.1	220	2	I50588
25	245	29.6	208	2	S20102
26	244.5	29.5	206	2	S14192
27	241	29.1	267	1	JC4268
28	238.5	28.8	202	1	TVHMF5
29					TVMSHS

30	236	28.5	187	2	S23595	embryonic fibrobla
31	235.5	28.4	237	1	S39582	transforming prote
32	235	28.4	245	1	TVMS72	transforming prote
33	234	28.3	239	1	S04742	embryonic fibrobla
34	231.5	28.0	192	2	S54407	embryonic fibrobla
35	216	26.1	208	2	S66486	fibroblast growth
36	216	26.1	208	2	A48137	fibroblast growth
37	209	25.2	211	2	JC7353	fibroblast growth
38	207	25.0	208	2	JC7082	fibroblast growth
39	206.5	24.9	207	2	JC5940	fibroblast growth
40	205.5	24.8	207	2	JC5941	fibroblast growth
41	204.5	24.7	194	2	I48610	keratinocyte growt
42	203	24.5	212	2	JC7511	keratinocyte growt
43	202.5	24.5	194	1	A36301	fibroblast growth
44	202.5	24.5	194	2	S26049	fibroblast growth
45	202.5	24.5	194	2	S49501	keratinocyte growt

ALIGNMENTS

RESULT 1

GKBOB
basic fibroblast growth factor precursor - bovine (fragment)
N:Alternate names: bFGF; Kidney-derived growth factor; prostatiopin
C:Species: Bos primigenius taurus (cattle)
C>Date: 13-Aug-1986 #sequence-revision 02-Jun-1995 #text-change 24-Nov-1999
C:Accession: A24663; A32878; A33784; A61550; A61551; A60310; A61094; A0186; A60316;
R:Abraham, J.A.; Mergia, A.; Whang, J.L.; Tumolo, A.; Friedmann, J.; Hyertild, K.A.; G
Science 233, 545-548, 1986
A:Title: Nucleotide sequence of a bovine clone encoding the angiogenic protein, basic
A:Reference number: A94290; MUID:86261806
A:Accession: A24663
A:Molecule type: mRNA
A:Residues: 3-157 <ABR>
A:Cross-references: GB:M13440; NID:g163049; PIDN:AAA30518.1; PID:g163050
A:Experimental source: pituitary gland
R:Abraham, J.A.; Whang, J.L.; Tumolo, A.; Whang, J.L.; Tumolo, A.; Fiddes, J.C.
Cold Spring Harb. Symp. Quant. Biol. 51, 657-668, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence, genomic organizat
A:Reference number: A90924; MUID:87217066
A:Accession: A32878
A:Molecule type: mRNA
A:Residues: 3-157 <ABR>
A:Molecule type: protein
R:Miller, P.G.; Li, Y.S.; Hoffman, R.M.; Kodner, C.M.; Siegel, N.R.; Deuel, T.F.
Biochem. Biophys. Res. Commun. 165, 1096-1103, 1989
A:Title: A novel 17 kD heparin-binding growth factor (HBGF-8) in bovine uterus: purif
A:Reference number: A33784; MUID:90121211
A:Accession: A33784
A:Molecule type: protein
A:Residues: 1-14 <MTL>
A:Note: demonstration of a possible alternative initiator or splice junction
R:Bercolini, J.; Hearn, M.T.W.
Mol. Cell. Endocrinol. 51, 187-199, 1987
A:Title: Isolation, characterization and tissue localisation of an N-terminal-truncat
A:Reference number: A61550; MUID:87247652
A:Accession: A61550
A:Molecule type: protein
A:Residues: 16-35 <BER>
R:ueno, N.; Baird, A.; Esch, F.; Ling, N.; Guillemin, R.
Mol. Cell. Endocrinol. 49, 189-194, 1987
A:Title: Isolation and partial characterization of basic fibroblast growth factor fro
A:Reference number: A61551; MUID:87162866
A:Accession: A61551
A:Molecule type: protein
A:Residues: 27-35, 'X', 37-41 <UE3>
A:Experimental source: testes
A:Note: this form appears to be identical to the renal form
R:ueno, N.; Baird, A.; Esch, F.; Shimasaki, S.; Ling, N.; Guillemin, R.
Regul. Pept. 16, 135-145, 1986
A:Title: Purification and partial characterization of a mitogenic factor from bovine
A:Reference number: A60310; MUID:87119165
A:Accession: A60310

A:Molecule type: protein
A:Residues: 23-35,'X',37-42 <UEN>
A:Experimental source: liver
R:Ueno, N.; Baird, A.; Esch, F.; Ling, N.; Guillemin, R.
Biochem. Biophys. Res. Commun. 138, 580-588, 1986
A:Title: Isolation of an amino terminal extended form of basic fibroblast growth factor.
A:Reference number: A24819; MUID:86295737
A:Contents: annotation
A:Note: the amino end of this form was blocked; the peptide composition matched what was
R:Gospodarowicz, D.; Baird, A.; Cheng, J.; Lui, G.M.; Esch, F.; Bohnen, P.
Endocrinology 118, 82-90, 1986
A:Title: Isolation of fibroblast growth factor from bovine adrenal gland: physicochemical
A:Reference number: A61094; MUID:8601530
A:Accession: A61094
A:Molecule type: protein
A:Residues: 12-25,27-35,'X',37-40 <GOS>
A:Experimental source: adrenal gland
R:Esch, F.; Baird, A.; Ling, N.; Ueno, N.; Hill, F.; Denoroy, L.; Klepper, R.; Gospodarc
Proc. Natl. Acad. Sci. U.S.A. 82, 6507-6511, 1985
A:Title: Primary structure of bovine pituitary basic fibroblast growth factor (FGF) and
A:Reference number: A01386; MUID:86016731
A:Accession: A01386
A:Molecule type: protein
A:Residues: 12-157 <ESC>
A:Experimental source: pituitary gland
R:Baird, A.; Esch, F.; Bohnen, P.; Ling, N.; Gospodarowicz, D.
Regul. Pept. 12, 201-213, 1985
A:Title: Isolation and partial characterization of an endothelial cell growth factor fro
A:Reference number: A60316; MUID:86095426
A:Accession: A60316
A:Molecule type: protein
A:Residues: 27-35,'X',37-43 <BAI>
A:Experimental source: kidney
R:Bohlen, P.; Baird, A.; Esch, F.; Ling, N.; Gospodarowicz, D.
Proc. Natl. Acad. Sci. U.S.A. 81, 5364-5368, 1984
A:Title: Isolation and partial molecular characterization of pituitary fibroblast growth
A:Reference number: A22054; MUID:84298139
A:Accession: A22054
A:Molecule type: protein
A:Residues: 12-26 <BOH>
A:Comment: The acidic and basic fibroblast growth factors are the major endothelial-cell
ell types in vitro (although bFGF is 30-100 times more potent than aFGF in stimulating t
C:Comment: This protein binds heparin more strongly than aFGF.
C:Superfamily: fibroblast growth factor
C:Keywords: alternative splicing; angiogenesis; blocked amino end; growth factor; hepari
F:1-157/Product: basic fibroblast growth factor, uterine form #status predicted <MAT1>
F:4-157/Product: basic fibroblast growth factor, pituitary gamma form #status experiment
F:12-157/Product: basic fibroblast growth factor, pituitary alpha form #status experiment
F:16-157/Product: basic fibroblast growth factor, pituitary short form #status predicted
F:23-157/Product: basic fibroblast growth factor, hepatic form #status experimental <MAT
F:27-157/Product: basic fibroblast growth factor, renal form #status experimental <MAT6>
F:29-33,118-121/Region: heparin binding #status predicted
F:4/Modified site: blocked amino end (Ala) (in mature form pituitary gamma) (probably ac

Query Match 100.0%; Score 828; DB 1; Length 157;
Best Local Similarity 100.0%; Pred. No. 8,66-75;
Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSTTTPALPEDGSGAFPFGHFKDKRLCYCKNGSFFLRHHPGRDVGREKSDPHI 60
DB 3 MAAGSTTTPALPEDGSGAFPFGHFKDKRLCYCKNGSFFLRHHPGRDVGREKSDPHI 62
QY 61 KIOLOAEHGGVSVIKGVCAHRYLAMKEDGRLLASKCVTECEPFEELSSNNYTSRRY 120
DB 63 KIOLOAEHGGVSVIKGVCAHRYLAMKEDGRLLASKCVTECEPFEELSSNNYTSRRY 122
QY 121 SSMYVALKRTGQYKLGPKTGPQKATLFLPMASAKS 155
DB 123 SSMYVALKRTGQYKLGPKTGPQKATLFLPMASAKS 157

RESULT 2
A:Title: Amino-terminal sequence of a large form of basic fibroblast growth factor is

A32398
basic fibroblast growth factor precursor, 22.5K form - human
N:Alternate names: bFGF; fibroblast growth factor 2; prostatic growth factor; prostat
N:Contents: basic fibroblast growth factor, 18K form
C:Species: Homo sapiens (man)
C:Date: 31-Jul-1988 #sequence_revision 31-Dec-1993 #text_change 21-Jul-2000
C:Accession: A32398; A61537; A26642; B32878; S00297; A54316; B54316; A33624; A25824;
R:Prats, H.; Kaghad, M.; Prats, A.C.; Klagsbrun, M.; Lelias, J.M.; Liauzun, P.; Chailo
Proc. Natl. Acad. Sci. U.S.A. 86, 1836-1840, 1989
A:Title: High molecular mass forms of basic fibroblast growth factor are initiated by
A:Reference number: A32398; MUID:89184522
A:Accession: A32398
A:Molecule type: mRNA
A:Residues: 1-210 <PRA>
A:Cross-references: GB:J04513; NID:q183083; PID:AAA52531.1; PID:q459811
R:Shibata, F.; Baird, A.; Florkiewicz, R.
Growth Factors 4, 277-287, 1991
A:Title: Functional characterization of the human basic fibroblast growth factor gene
A:Reference number: A61537; MUID:92110035
A:Accession: A61537
A:Molecule type: DNA
A:Residues: 1-114 <SHI>
A:Note: authors translated the codon GGA for residue 47 as Ala
R:Kurukawa, T.; Sasada, R.; Iwane, M.; Igatahshi, K.
FEBS Lett. 213, 189-194, 1987
A:Title: Cloning and expression of cDNA encoding human basic fibroblast growth factor
A:Reference number: A26642; MUID:87162468
A:Accession: A26642
A:Molecule type: mRNA
A:Residues: 56-210 <KUR>
A:Cross-references: GB:M27968; NID:q182562; PID:AAA52448.1; PID:q182563
R:Abraham, J.A.; Wang, J.L.; Tumolo, A.; Merzila, A.; Fiddes, J.C.
Cold Spring Harb. Symp. Quant. Biol. 51, 657-668, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence, genomic organizat
A:Reference number: A90924; MUID:87217066
A:Accession: B32878
A:Molecule type: mRNA
A:Residues: 56-210 <ABR>
A:Note: the authors translated the codon GAA for residue 108 as Gly
R:Abraham, J.A.; Wang, J.L.; Tumolo, A.; Merzila, A.; Friedman, J.; Gospodarowicz, D.
EMBO J. 5, 2523-2528, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence and genomic organ
A:Reference number: S00297; MUID:87053817
A:Accession: S00297
A:Status: not compared with conceptual translation
A:Molecule type: DNA
A:Residues: 1-155 <AB2>
A:Note: the authors translated the codon GAA for residue 108 as Gly
R:Shimoyama, Y.; Gotoh, M.; Ino, Y.; Sakamoto, M.; Kato, K.; Hirohashi, S.
Jpn. J. Cancer Res. 82, 1263-1270, 1991
A:Title: Characterization of high-molecular-mass forms of basic fibroblast growth fac
rtingenesis.
A:Reference number: A54316; MUID:92091228
A:Accession: A54316
A:Molecule type: protein
A:Residues: 'XX',86-88,'X',90-91,'X',93-95 <SH3>
A:Experimental source: C-121 hepatocellular carcinoma cell line
A:Note: sequence extracted from NCBI backbone (NCBIP:71595)
A:Accession: B54316
A:Molecule type: protein
A:Residues: 'XX',19,'X',21-29 <SH2>
A:Note: sequence extracted from NCBI backbone (NCBIP:71594)
R:Fejete, J.J.; Bradley, J.D.; Fryburg, K.; Farris, J.; Cousens, L.C.; Barr, P.J.; Bai
J. Cell Biol. 109, 3105-3114, 1989
A:Title: Differential effects of heparin, fibronectin, and laminin on the phosphoryla
A:Reference number: A33624; MUID:90078343
A:Accession: A33624
A:Status: preliminary
A:Molecule type: protein
A:Residues: 57-210 <FEI>
R:Story, M.T.; Esch, F.; Shimaseki, S.; Sasase, J.; Jacobs, S.C.; Lawson, R.K.
Biochem. Biophys. Res. Commun. 142, 702-709, 1987
A:Title: Amino-terminal sequence of a large form of basic fibroblast growth factor is

A:Reference number: A25824; MUID:87156686
A:Accession: A25824
A:Molecule type: protein
A:Residues: 57-77 <SNO>
A:Experimental source: prostate
R:Glennex-Galligo, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.
Biochem. Biophys. Res. Commun. 135, 541-548, 1986
A:Title: Human brain-derived acidic and basic fibroblast growth factors: amino terminal
A:Reference number: A90122; MUID:86186784
A:Accession: B24243
A:Molecule type: protein
A:Residues: 65-102, 'X', 104-105 <GIM>
A:Experimental source: brain
R:Gautschi, P.; Frater-Schroder, M.; Bollen, P.
FEBS Lett. 204, 203-207, 1986
A:Title: Partial molecular characterization of endothelial cell mitogens from human brain
A:Reference number: A91364; MUID:86275260
A:Accession: B24301
A:Molecule type: protein
A:Residues: 65-88, 'X', 90-98, 'X', 100 <GAN>
R:Sommer, A.; Brewer, M.T.; Thompson, R.C.; Moscatelli, D.; Presta, M.; Rifkin, D.B.
Biochem. Biophys. Res. Commun. 144, 543-550, 1987
A:Title: A form of human basic fibroblast growth factor with an extended amino terminus.
A:Reference number: S42242; MUID:87213238
A:Accession: S42242
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 54-210 <SOM>
A:Cross-references: EMBL:M17599; NID:q183086; PIDD:AAA52534.1; PID:q183087
R:Pantoliano, M.W.; Horlick, R.A.; Springer, B.A.; Van Dyk, D.E.; Tobey, T.; Wetmore, D.
Biochemistry 33, 10229-10248, 1994
A:Title: Multivalent ligand-receptor binding interactions in the fibroblast growth factor
A:Reference number: A55784; MUID:94347757
A:Accession: B55784
A:Molecule type: protein
A:Residues: 54-71 <PAN>
R:Watson, R.; Anthony, F.; Pickett, M.; Lambden, P.; Masson, G.M.; Thomas, E.J.
Biochem. Biophys. Res. Commun. 187, 1227-1231, 1992
A:Title: Reverse transcription with nested polymerase chain reaction shows expression of
clients.
A:Reference number: I52267; MUID:93038590
A:Accession: I52267
A:Status: preliminary; translated from GB/EMBL/DBJ
A:Molecule type: mRNA
A:Residues: 95-182 <RES>
A:Cross-references: GB:S47380; NID:q256535; PIDD:AA013853.1; PID:g4261553
R:Patry, V.; Bugler, B.; Amalric, F.; Prome, J.C.; Prats, H.
FEBS Lett. 349, 23-28, 1994
A:Title: Purification and characterization of the 210-amino acid recombinant basic fibro
A:Reference number: S46253; MUID:94320639
A:Accession: S46253
A:Molecule type: protein
A:Residues: 39-53, 65-88 <PAT>
A:Note: recombinant gene expressed in Escherichia coli
C:Genetics:
A:Gene: GDB:FCF2; FCFB
A:Cross-references: GDB:119910; OMIM:134920
A:Map position: 4q25-4q27
A:Start codon: CAG
C:Superfamily: fibroblast growth factor
C:Keywords: alternative initiators; angiogenesis; growth factor; heparin binding; mitoge
F:1-210/Product: basic fibroblast growth factor, 22-5K form #status predicted <MA2>
F:65-210/Product: basic fibroblast growth factor, 18K form #status predicted <MA2>
F:82-86/Region: heparin binding #status predicted
F:111-174/Region: heparin binding #status predicted

Query Match 98.7%; Score 817; DB 2; Length 210;
Best Local Similarity 98.7%; Pred. NO. 1.5e-73;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGGGAFPPGHFKDPKRLYCKNGGFLLRHPDGRVGVREKSDPHI 60

Db
56 MAAGSITTLPALPEDGGGAFPPGHFKDPKRLYCKNGGFLLRHPDGRVGVREKSDPHI 115
QY 61 KQLOAEERGVVSIKVCANRYLAMKEDGRLLASCVTDECFEFELSENNTYRSRY 120
Db 116 KQLOAEERGVVSIKVCANRYLAMKEDGRLLASCVTDECFEFELSENNTYRSRY 175
QY 121 SSWYVALKRTGGYKLGPKTGPQKATLFLPMSAKS 155
Db 176 TSWYVALKRTGGYKLGSKTGPQKATLFLPMSAKS 210

RESULT 3
A31674.
basic fibroblast growth factor precursor - rat
M:Alternate names: bFGF
C:Species: Rattus norvegicus (Norway rat)
C:Date: 21-May-1990 #sequence_revision 21-May-1990 #text_change 16-Jul-1999
C:Accession: A31674; S00876; S24309
R:Shimasaki, S.; Emoto, N.; Koba, A.; Mercado, M.; Shibata, F.; Cooksey, K.; Baird, A.
Biochem. Biophys. Res. Commun. 157, 256-263, 1988
A:Title: Complementary DNA cloning and sequencing of rat ovarian basic fibroblast gro
A:Reference number: A31674; MUID:89061721
A:Accession: A31674
A:Molecule type: mRNA
A:Residues: 1-154 <SHI>
A:Cross-references: GB:M22427; NID:q204285; PIDD:AAA41210.1; PID:q204286
R:Kurokawa, T.; Sano, M.; Igataishi, K.
Nucleic Acids Res. 16, 5201, 1988
A:Title: Nucleotide sequence of rat basic fibroblast growth factor cDNA.
A:Reference number: S00876; MUID:88262516
A:Accession: S00876
A:Molecule type: mRNA
A:Residues: 1-154 <KUR>
A:Cross-references: EMBL:X07285; NID:q56203; PIDD:CAA30265.1; PID:q56204
R:El-Husseini, A.E.D.; Paterson, J.A.; Myal, Y.; Shiu, R.P.C.
Biochem. Biophys. Acta 1131, 314-316, 1992
A:Title: PCR detection of the rat brain basic fibroblast growth factor (bFGF) mRNA co
A:Reference number: S24309; MUID:92329546
A:Accession: S24309
A:Status: preliminary; translation not shown
A:Molecule type: mRNA
A:Residues: 35-154 <ELH>
A:Cross-references: EMBL:X61697; NID:q56143; PIDD:CAA43863.1; PID:g56144
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor
F:1-9/Domain: signal sequence #status predicted <SIG>
F:10-154/Product: basic fibroblast growth factor #status predicted <MAT>

Query Match 96.2%; Score 796.5; DB 2; Length 154;
Best Local Similarity 96.8%; Pred. NO. 1.1e-71;
Matches 150; Conservative 3; Mismatches 1; Indels 1; Gaps 1;

QY 1 MAAGSITTLPALPEDGGGAFPPGHFKDPKRLYCKNGGFLLRHPDGRVGVREKSDPHI 60
Db 1 MAAGSITSLPALPEDGG -GAFPPGHFKDPKRLYCKNGGFLLRHPDGRVGVREKSDPHV 59
QY 61 KQLOAEERGVVSIKVCANRYLAMKEDGRLLASCVTDECFEFELSENNTYRSRY 120
Db 60 KQLOAEERGVVSIKVCANRYLAMKEDGRLLASCVTDECFEFELSENNTYRSRY 119
QY 121 SSWYVALKRTGGYKLGPKTGPQKATLFLPMSAKS 155
Db 120 SSWYVALKRTGGYKLGSKTGPQKATLFLPMSAKS 154

RESULT 4
C37360
basic fibroblast growth factor - mouse
C:Species: Mus musculus (house mouse)
C:Date: 17-Apr-1993 #sequence_revision 17-Apr-1993 #text_change 16-Jul-1999
C:Accession: C37360

R:Hebert, J.M.; Basilico, C.; Goldfarb, M.; Haub, O.; Martin, G.R.
Dev. Biol. 138, 454-463, 1990
A:Title: Isolation of cDNAs encoding four mouse FGF family members and characterization
A:Reference number: A37360; MUID:90201563
A:Accession: C37360
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-154 <HEB>
A:Cross-references: GB:M30644; NID:g193296; PIDN:AAA37621.1; PID:g309239
C:Superfamily: fibroblast growth factor

Query Match 94.4%; Score 781.5; DB 2; Length 154;
Best Local Similarity 94.8%; Pred. No. 3.4e-70;
Matches 147; Conservative 4; Mismatches 3; Indels 1; Gaps 1;

OY 1 MAAGSITTLPALPEDGGGAPPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPHI 60
DB 1 MAAGSITTLPALPEDGGA-APPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPHV 59
OY 61 KLOLAEEERGVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRKY 120
DB 60 KLOLAEEERGVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRKY 119
OY 121 SSWYALKRTGOYKLGPTGPGOKAILFLPMSAKS 155
DB 120 SSWYALKRTGOYKLGSKTGPQOKAILFLPMSAKS 154

RESULT 5
S00185
basic fibroblast growth factor - sheep
N:Alternate names: prostatorin
C:Species: Ovis orientalis aries, Ovis ammon aries (domestic sheep)
C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
C:Accession: S00185
R:Stimpson, R.J.; Moritz, R.L.; Lloyd, C.J.; Fabri, L.J.; Nice, E.C.; Rubira, M.R.; Burge
FEBS Lett. 224, 128-132, 1987
A:Title: Primary structure of ovine pituitary basic fibroblast growth factor.
A:Reference number: S00185; MUID:88055577
A:Accession: S00185
A:Molecule type: protein
A:Residues: 1-146 <SIM>
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor; heparin binding; mitogen
F:18-22/Region: heparin binding #status predicted
F:107-110/Region: heparin binding #status predicted

Query Match 94.3%; Score 781; DB 1; Length 146;
Best Local Similarity 99.3%; Pred. No. 3.6e-70;
Matches 145; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
OY 10 PALPEDGGGAPPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPHIKLOLAEE 69
DB 1 PALPEDGGGAPPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPHIKLOLAEE 60
OY 70 GVVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRKYSSWYALKR 129
DB 61 GVVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRKYSSWYALKR 120
OY 130 TGOYKLGPTGPGOKAILFLPMSAKS 155
DB 121 TGOYKLGPTGPGOKAILFLPMSAKS 146

RESULT 6
A48834
basic fibroblast growth factor - chicken
C:Species: Gallus gallus (chicken)
C:Date: 01-Dec-1993 #sequence_revision 18-Nov-1994 #text_change 16-Jul-1999
C:Accession: A48834; S23636
R:Bojta, A.Z.; Meijers, C.; Zeller, R.

Dev. Biol. 157, 110-118, 1993
A:Title: Expression of alternatively spliced bFGF first coding exons and antisense mR
A:Reference number: A48834; MUID:93246053
A:Accession: A48834
A:Status: preliminary
A:Molecule type: nucleic acid
A:Residues: 1-189 <BOR>
A:Experimental source: embryo
A:Note: Sequence extracted from NCBI backbone (NCBIN:131000, NCBI:131001)
R:Mitrani, E.; Gruenbaum, Y.; Shohat, H.; Ziv, T.
Development 109, 387-393, 1990
A:Title: Fibroblast growth factor during mesoderm induction in the early chick embryo
A:Reference number: S23636; MUID:90382254
A:Accession: S23636
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 95-128 <MIT>
A:Cross-references: EMBL:X56804; NID:g62855; PIDN:CAA40139.1; PID:g62856
C:Superfamily: fibroblast growth factor

Query Match 93.0%; Score 770; DB 2; Length 189;
Best Local Similarity 93.5%; Pred. No. 6e-69;
Matches 144; Conservative 4; Mismatches 6; Indels 0; Gaps 0;

OY 2 AAGSITTLPALPEDGGGAPPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPHI 61
DB 36 AAGSITTLPALPDGGGGA-PPPPGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPHI 95
OY 62 LOLOAEEERGVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRKY 121
DB 96 LOLOAEEERGVSISIKGSANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRKY 155
OY 122 SSWYALKRTGOYKLGPTGPGOKAILFLPMSAKS 155
DB 156 DMYVALKRTGOYKLGPTGPGOKAILFLPMSAKS 189

RESULT 7
S31622
basic fibroblast growth factor - short-tailed opossum (Monodelphis domestica) (fragme
C:Species: Monodelphis domestica
C:Date: 20-Feb-1995 #sequence_revision 20-Feb-1995 #text_change 12-Apr-1995
C:Accession: S31622
R:Kusewilt, D.F.; Sabourin, C.L.K.; Budge, C.L.; Ley, R.D.
submitted to the EMBL Data Library, September 1992
A:Description: Characterization of cDNA encoding basic fibroblast growth factor of th
A:Reference number: S31622
A:Accession: S31622
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 1-164 <KUS>
A:Cross-references: EMBL:Z15154
C:Superfamily: fibroblast growth factor

Query Match 91.6%; Score 758.5; DB 2; Length 164;
Best Local Similarity 92.9%; Pred. No. 7e-68;
Matches 145; Conservative 4; Mismatches 6; Indels 1; Gaps 1;

OY 1 MAAGSITTLPALPED-GGGAAPPFGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPH 59
DB 9 MAAGSITTLPALSGDGGGGAAPPFGHFKDPKRLCYCKNGGFFLRHPDGRVDGVRKSDPH 68
OY 60 IKLOLAEEERGVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRKY 119
DB 69 IKLOLAEEERGVSISIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRKY 128
OY 120 YSSWYALKRTGOYKLGPTGPGOKAILFLPMSAKS 155
DB 129 YSSWYALKRTGOYKLGSKTGPQOKAILFLPMSAKS 164

RESULT 8
146711
fibroblast growth factor - rabbit (fragment)
C:Species: Oryctolagus cuniculus (domestic rabbit)
C:Date: 14-Feb-1997 #sequence_revision 14-Feb-1997 #text_change 16-Jul-1999
C:Accession: 146711
R:Winkles, J.A.; Friesel, R.; Alberts, G.F.; Janat, M.F.; Liau, G.
Am. J. Pathol. 143, 518-527, 1993
A:Title: Elevated expression of basic fibroblast growth factor in an immortalized rabbit
A:Reference number: 146711; MUID:93343209
A:Accession: 146711
A:Status: preliminary; translated from GB/EMBL/DBJ
A:Molecule type: mRNA
A:Residues: 1-137 <WIN>
A:Cross-references: GB:L12034; NID:9165014; PIDN:AAA31248.1; PID:9165015
C:Superfamily: fibroblast growth factor

Query Match 88.9%; Score 736; DB 2; Length 137;
Best Local Similarity 99.3%; Pred. No. 9.8e-66;
Matches 136; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

OY 10 PALPDDGSGAPPPGHPKDPKRLCKNGGFRLRHPDGRVDGVRKSDPHITLQDAEER 69
|||||
Db 1 PALPDDGSGAPPPGHPKDPKRLCKNGGFRLRHPDGRVDGVRKSDPHITLQDAEER 60
OY 70 GVVSIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSKYSWYVALKR 129
|||||
Db 61 GVVSIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSKYSWYVALKR 120
OY 130 TGOYKLGPKTGPGOKAI 146
|||||
Db 121 TGOYKLGSKTGPGOKAI 137

RESULT 9
A40117
basic fibroblast growth factor - African clawed frog
C:Species: Xenopus laevis (African clawed frog)
C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
C:Accession: A40117; A29618
R:Kimmelman, D.; Abraham, J.A.; Haaparanta, T.; Palisi, T.M.; Kirschner, M.W.
Science 242, 1053-1056, 1988
A:Title: The presence of fibroblast growth factor in the frog egg: its role as a natural
A:Reference number: A40117; MUID:89058421
A:Accession: A40117
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-155 <KIN>
A:Cross-references: GB:M18067; NID:92141177; PIDN:AAA49726.1; PID:92141178; GB:M21092
R:Kimmelman, D.; Kirschner, M.
Cell 51, 869-877, 1987
A:Title: Synergistic induction of mesoderm by FGF and TGF-beta and the identification of
A:Reference number: A29618; MUID:88052890
A:Accession: A29618
A:Molecule type: mRNA
A:Residues: 95-110,112-155 <KI2>
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor

Query Match 82.7%; Score 685; DB 1; Length 155;
Best Local Similarity 83.9%; Pred. No. 1.3e-60;
Matches 130; Conservative 8; Mismatches 17; Indels 0; Gaps 0;

OY 1 MAAGSITTLPALPEDGSGAPPPGHPKDPKRLCKNGGFRLRHPDGRVDGVRKSDPHI 60
|||||
Db 1 MAAGSITTLPLTESEDEGNTPFSGFKDPKRLCKNGGFRLRINSRGVDGSRDSDPHI 60
OY 61 KILOAEEGVVSIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRY 120
|||||
Db 61 KILOAEEGVVSIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRY 120

OY 121 SSMYVALKRTGQYKLGPKTGPGOKAILFLPMSAKS 155
|||||
Db 121 SSMYVALKRTGQYKNGSSSTGPGOKAILFLPMSAKS 155

RESULT 10
A32484
basic fibroblast growth factor precursor, 25K - guinea pig (fragments)
C:Species: Cavia porcellus (guinea pig)
C:Date: 20-Oct-1989 #sequence_revision 20-Oct-1989 #text_change 15-Jun-1996
C:Accession: A32484
R:Sommer, A.; Moscatelli, D.; Rifkin, D.B.
Biochem. Biophys. Res. Commun. 160, 1267-1274, 1989
A:Title: An amino-terminally extended and post-translationally modified form of a 25K
A:Reference number: A32484; MUID:89273588
A:Accession: A32484
A:Status: preliminary; nucleic acid sequence not shown; not compared with conceptual
A:Molecule type: mRNA
A:Residues: 1-125 <SOM>
C:Superfamily: fibroblast growth factor

Query Match 56.3%; Score 466.5; DB 2; Length 125;
Best Local Similarity 63.2%; Pred. No. 4.7e-39;
Matches 98; Conservative 1; Mismatches 5; Indels 51; Gaps 3;

OY 1 MAAGSITTLPALPEDGSGAPPPGHPKDPKRLCKNGGFRLRHPDGRVDGVRKSDPHI 60
|||||
Db 22 MAAGSITTLPALPEGDGAFAFGHKKDP-----NGGFLR----- 57
OY 61 KILOAEEGVVSIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRY 120
|||||
Db 58 -LOLQAEER-----CVTDECFEERLESNNYNTYRSRY 90
OY 121 SSMYVALKRTGQYKLGPKTGPGOKAILFLPMSAKS 155
|||||
Db 91 SSMYVALKRTGQYKLGSKTGPGOKAILFLPMSAKS 125

RESULT 11
A60721
acidic fibroblast growth factor - golden hamster
N:Alternate names: heparin-binding growth factor 1
C:Species: Mesocricetus auratus (golden hamster)
C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
C:Accession: A60721
R:Hall, J.A.; Harris, M.A.; Malark, M.; Mansson, P.E.; Zhou, H.; Harris, S.E.
J. Cell. Biochem. 43, 17-26, 1990
A:Title: Characterization of the hamster DDT-1 cell afGF/HGBF-1 gene and cDNA and its
A:Reference number: A60721; MUID:90270291
A:Accession: A60721
A:Status: not compared with conceptual translation
A:Molecule type: DNA
A:Residues: 1-155 <HAL>
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor; heparin binding

Query Match 51.6%; Score 427.5; DB 1; Length 155;
Best Local Similarity 55.4%; Pred. No. 4.4e-35;
Matches 87; Conservative 17; Mismatches 48; Indels 5; Gaps 2;

OY 1 MAAGSITTLPALPEDGSGAPPPGHPKDPKRLCKNGGFRLRHPDGRVDGVRKSDPHI 60
|||||
Db 1 MAEGETITTSALTERN---LPPGNKKRKLKLYCSNGGFLRLIPGTYDGRDSDPHI 57
OY 61 KILOAEEGVVSIGVCANRYLAMKEDGRLLASKCVTDECFEERLESNNYNTYRSRY 120
|||||
Db 58 OLOLSAESAGEYV IKGTETGYLADMTDGLYGSQYPNNECLFLELBNHNNTYRSKH 117
OY 121 S---SWYVALKRTGQYKLGPKTGPGOKAILFLPMSAKS 155
|||||
Db 118 AEKNMFVGLKNGSGCRKRPRTHYGOKAILFLPLPVSS 154

FEBS Lett. 204,203-207, 1986
A:Title: Partial molecular characterization of endothelial cell mitogens from human brain
A:Reference number: A91364; MUID:86275260
A:Accession: A24301
A:Molecule type: protein
A:Residues: 16-30, 'X',32-49 <GAV>
R:Gautschi-Sova, P.; Muller, T.; Bohlen, P.
Biochem. Biophys. Res. Commun. 140, 874-880, 1986
A:Title: Amino acid sequence of human acidic fibroblast growth factor.
A:Reference number: A26386; MUID:87048871
A:Accession: A26386
A:Molecule type: protein
A:Residues: 16-155 <GAN>
A:Experimental source: Brain
R:Chavan, A.J.; Haley, B.E.; Volkin, D.B.; Marfia, K.E.; Verticelli, A.M.; Bruner, M.W.;
Biochemistry 33, 7193-7202, 1994
A:Title: Interaction of nucleotides with acidic fibroblast growth factor (FGF-1).
A:Reference number: A53639; MUID:94271773
A:Accession: A53639
A:Molecule type: protein
A:Residues: 16-30, 'X',32-38;73-75, 'X',77-97, 'X',99-101;128-131, 'X',133-140, 'X',142-152 <
C:Genetics:
A:Gene: GDB:FGF1; FGFA
A:Cross-references: GDB:119909; OMIM:131220
A:Map position: 3q31.3-3q33.2
A:Introns: 57/1; 91/3
C:Superfamily: fibroblast growth factor
E:Keywords: alternative splicing; growth factor; heparin binding
F:16-155/Product: fibroblast growth factor 1 #status experimental <MAT>
F:129/Binding site: carbohydrate (Asn) (covalent) #status absent

```

Query Match          50.5%: Score 418.5: DB 1: Length 155;
Best Local Similarity 54.8%: Pred. No. 3,4e-34;
Matches 86: Conservative 17; Mismatches 49; Indels 5; Gaps 2;

Oy 1 MAAGSITTLPALPEDOGSGAPFPGHFRKDRKRLTCKNGGFEFLRLHPDGRVGVREKSPDPI 60
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 1 MAEGETITFTALTEKN---LPPGNKYKKRLKXCNSNGHRLRLLPDGTVDGCTDRSQHI 57
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Oy 61 KIQLAEEERGVSIVKGVCANRILAMKEDGBLLASKCVTDCEFFERLESNNVNTYRSRKY 120
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 58 QQLSAESVGEVYIKSTETGOYLAMTDGLIGVSSQTPNECEFLERLEENHNYTYISKKH 117
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Oy 121 S--SMYVALKRTGYKFLGPKTGGGOKAILFLPMSAKS 155
    :||:| ||:| ||:| ||:| ||:| ||:| ||:| ||:| ||:| ||:| ||:| ||:|
Db 118 AEKNMFVGLKKNGSCKRGPRTHYGAKAILFLPLVSS 154
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||

RESULT 14
S04147
acidic fibroblast growth factor 1 - rat
N:Alternate names: heparin-binding growth factor 1
C:Species: Rattus norvegicus (Norway rat)
C:Date: 28-Feb-1990 #sequence__revision 28-Feb-1990 #text__change 16-Jul-1999
C:Accession: S04147
R:Goudrich, S.P.; Yan, G.C.; Bahnenburg, K.; Mansson, P.E.
Nucleic Acids Res. 17, 2667, 1989
A:Title: The nucleotide sequence of rat heparin binding growth factor 1 (HBGF-1).
A:Reference number: S04147; MUID:89240051
A:Accession: S04147
A:Molecule type: mRNA
A:Residues: 1-155 <G00>
A:Cross-references: EMBL:X14232; NID:g56351; PIDN:CA32448.1; PID:g56352
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor; heparin binding

```

Query Match	49.9%	Score 413.5	DB 2	Length 155
Best Local Similarity	54.1%	Pred. No. 1.1e-33		
Matches 85	Conservative 18	Mismatches 49	Indels 5	Gaps 2

QY 1 MAAGSITTLPALPEDGGSGAFPFGHEKDK.LYCKNGGFELRIHPDGRVDGVREKSDPHI 60

```

Db      1  M A E G E I T T F A A L T E R E N - - - L P L G A N Y K K P F L L C S N G G H F L R L L P G Y I D G T R D R S D D H I 57
QY      61  K L O L Q A E E R G V S I K G V C A N R Y L A M K E D G R L L A S K C V T D C E F F E R L E S N N Y N T Y R S R K Y 120
Db      58  Q L O L S A E S A G C V Y I K G T E T Q O Y L A M T D E G L L Y S O P N E C L F L E R L E N H Y N T Y T S K H 117
QY      121  S - S M Y V A L K R T G O Y K L G P T G P G O K A I L P L P M S A K S 155
Db      118  A E K N M F E G L K K N G S C K R G P R T H Y G Q K A I L P L P V S S 154

```

RESULT 15
D37360
acidic fibroblast growth factor - mouse
N:Alternate names: aFGF; FGF-1
C:Species: Mus musculus (house mouse)
C:Date: 17-Apr-1993 #sequence_revision 17-Apr-1993 #text_change 16-Jul-1999
C:Accession: D37360; JC5231
R:Hebert, J.M.; Basilico, C.; Goldfarb, M.; Haub, O.; Martin, G.R.
Dev. Biol. 138, 454-463, 1990
A:Title: Isolation of cDNAs encoding four mouse FGF family members and characterization.
A:Reference number: A37360; MUID:90201563
A:Accession: D37360
A>Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-155 <HEB>
A:Cross-references: GB:M20641; NID:g193284; PIDN:AAA37618.1; PID:g309236
R:Madlal, F.; Hackshaw, K.V.; Chiu, I.M.
Gene 179, 231-236, 1996
A:Title: Cloning and characterization of the mouse Fgf-1 gene.
A:Reference number: JC5231; MUID:97128312
A:Accession: JC5231
A>Status: preliminary
A:Molecule type: DNA
A:Residues: 1-155 <MAD>
A:Cross-references: GB:U36456
C:Comment: This protein is an inducer of neovascularization in angiogenic disease induction.
C:Genetics:
A:Gene: Fgf-1
A:Introns: 57/1; 91/3
C:Superfamily: fibroblast growth factor

Query Match	49.9%	Score 413.5	DB 2	Length 155
Best Local Similarity	54.1% <td>Pred. No. 1.le-33</td> <td></td> <td></td>	Pred. No. 1.le-33		
Matches	85	Conservative 18	Matches 49	Indels 5
				Gaps 2
Qy	1	MAAGSITTLPALPEGGGGAAPPGHFKDPKRLCYCKANGGEFLIHPDGDVYDGKREKSDPHI	60	
		: : : : :		
Db	1	MAEGETTFPALTEFPN---LP GNKKPKRLKLYCNGGHEFLIPLDPGDVYDGTGRSDSHI	57	
Qy	61	K Q Q A E E G V S I N G V C A N R Y L A N K E D G R L A S K C V T D E C F F E L S N N Y T R S K Y	120	
		: : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :		
Db	58	Q Q L A S E S A G E Y I K G T E G Y L A M D T G L Y G S Q T P N D E C F L E R L E N H N T Y T S K H	117	
Qy	121	S---S W Y V A L K R T G Q Y K L G P K T G P G K A I L P M S A K S	155	
		: : : : : : : : : : : : : : : : : : : : : : : : : : : : : : : :		
Db	118	A E K N F V G I K N G S C K R G R T H Y G Q K A I L P P V S	154	

Search completed: June 7, 2002, 14:37:15
Job time: 242 sec

GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:46:42 ; Search time 23.13 seconds
(without alignments)
259.470 Million cell updates/sec

Title: US-09-802-365-6
Perfect score: 828
Sequence: 1 MAAGSITTLPALPEDEGSGA.....GPKTGPQKAILFLPMSAKS 155

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 105224 seqs, 38719550 residues

Total number of hits satisfying chosen parameters: 105224

Minimum DB seq length: 0

Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : Swissprot_40.*
Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	828	100.0	155	1	FGF2_BOVIN
2	822	99.3	155	1	FGF2_SHEEP
3	817	98.7	155	1	FGF2_HUMAN
4	796.5	96.2	154	1	FGF2_FAT
5	781.5	94.4	154	1	FGF2_MOUSE
6	770	93.0	158	1	FGF2_CHICK
7	758.5	91.6	156	1	FGF2_MONDO
8	736	88.9	137	1	FGF2_RABIT
9	685	82.7	155	1	FGF2_XENLA
10	427.5	51.6	155	1	FGF1_MESAU
11	419.5	50.7	155	1	FGF1_CHICK
12	418.5	50.5	155	1	FGF1_MOUSE
13	413.5	49.9	155	1	FGF1_MOUSE
14	412.5	49.8	152	1	FGF1_FIG
15	402.5	48.6	155	1	FGF1_HOVIN
16	262	31.6	194	1	FGF4_CHICK
17	252.5	30.5	206	1	FGF4_HUMAN
18	252	30.4	256	1	FGF3_BRARE
19	250.5	30.3	264	1	FGF5_MOUSE
20	250.5	30.3	266	1	FGF5_MOUSE
21	249	30.1	220	1	FGF3_CHICK
22	245.5	29.6	206	1	FGF6_HOVIN
23	245	29.6	208	1	FGF6_HUMAN
24	245	29.6	208	1	FGF6_MOUSE
25	242	29.2	268	1	FGF5_HUMAN
26	238.5	28.8	202	1	EGF4_MOUSE
27	236	28.5	187	1	EGF4_XENLA
28	235.5	28.4	237	1	FGF3_XENLA
29	235	28.4	245	1	FGF3_MOUSE
30	234	28.3	239	1	FGF3_HUMAN
31	231.5	28.0	192	1	EGF4_XENLA
32	216	26.1	208	1	EGF3_HUMAN
33	216	26.1	208	1	EGF3_MOUSE

34	216	26.1	208	1	FGF9_RAT	P36364 rattus norv
35	212	25.6	209	1	FGF9_XENLA	O91875 xenopus lae
36	209	25.2	211	1	FGF9_HUMAN	O9np95 homo sapien
37	206.5	24.9	207	1	FGF7_RAT	O54769 rattus norv
38	205.5	24.8	194	1	FGF7_CANFA	P79150 canis famli
39	205.5	24.8	207	1	FGF7_HUMAN	O43320 homo sapien
40	204.5	24.7	194	1	FGF7_MOUSE	P36363 mus musculu
41	203	24.5	208	1	EGF4_HUMAN	O15520 homo sapien
42	203	24.5	215	1	FGF4_RAT	P70492 rattus norv
43	202.5	24.5	194	1	FGF7_HUMAN	P21781 homo sapien
44	202.5	24.5	194	1	FGF7_SHEEP	P48808 ovins aries
45	200	24.2	209	1	EGF4_MOUSE	O35565 mus musculu

ALIGNMENTS

RESULT ID	1	FGF2_BOVIN	STANDARD:	PRT:	155 AA.
AC	P03969:				
DT	23-OCT-1986 (Rel. 02, Created)				
DT	23-OCT-1986 (Rel. 02, Last sequence update)				
DT	01-MAR-2002 (Rel. 41, Last annotation update)				
DE	Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast growth factor) (BFGF) (Prostatropin) [Contains: Kidney-derived growth factor].				
GN	FGF2 OR FGF-2.				
OS	Bos taurus (Bovine).				
OC	Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;				
OC	Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;				
OX	Bovidae; Bovinae; Bos.				
RN	NCBI_TaxID=9913;				
RP	[1]				
RP	SEQUENCE FROM N.A.				
RA	MEDLINE=86261806; PubMed=2425435;				
RA	Abraham J.A., Whang J.L., Tumolo A., Friedman J.,				
RA	Hjerrild K.A., Gospodarowicz D., Fiddes J.C.;				
RT	"Nucleotide sequence of a bovine clone encoding the angiogenic protein, basic fibroblast growth factor.";				
RT	Science 233:545-548(1986).				
RL	[2]				
RN	SEQUENCE FROM N.A.				
RP	MEDLINE=87217066; PubMed=3472745;				
RA	Abraham J.A., Whang J.L., Tumolo A., Mergia A., Fiddes J.C.;				
RA	"Human basic fibroblast growth factor: nucleotide sequence, genomic organization, and expression in mammalian cells.";				
RT	Cold Spring Harb. Symp. Quant. Biol. 51:657-668(1986).				
RL	[3]				
RP	SEQUENCE OF 10-155.				
RA	MEDLINE=86016731; PubMed=3863109;				
RA	Esch F., Baird A., Ling N., Ueno N., Hill F., Denoroy L., Klepper R.,				
RA	Gospodarowicz D., Boehlen P., Guillemin R.;				
RT	"Primary structure of bovine pituitary basic fibroblast growth factor (FGF) and comparison with the amino-terminal sequence of bovine brain acidic FGF.";				
RT	Proc. Natl. Acad. Sci. U.S.A. 82:6507-6511(1985).				
RL	[4]				
RP	SEQUENCE OF 1-9.				
RA	MEDLINE=86295737; PubMed=3741423;				
RA	Ueno N., Baird A., Esch F., Ling N., Guillemin R.;				
RT	"Isolation of an amino terminal extended form of basic fibroblast growth factor.";				
RT	Biochem. Biophys. Res. Commun. 130:580-588(1986).				
RN	[5]				
RP	SEQUENCE OF 25-41.				
RA	TISSUE=Kidney;				
RC	MEDLINE=86095426; PubMed=4081126;				
RA	Baird A., Esch F., Boehlen P., Ling N., Gospodarowicz D.;				
RA	"Isolation and partial characterization of an endothelial cell growth factor from the bovine kidney: homology with basic fibroblast growth factor.";				
RT	Regul. Pept. 12:201-213(1985).				

[6]
 RN SEQUENCE OF 21-40.
 RP TISSUE-Kidney;
 RC MEDLINE=87119165; PubMed=3809608;
 RA Ueno N., Baird A., Esch F., Shimazaki S., Ling N., Guillemin R.;
 RT "Purification and partial characterization of a mitogenic factor from
 RT bovine liver: structural homology with basic fibroblast growth
 RT factor.";
 RL Regul. Pept. 16:135-145(1986).
 [7]
 RN X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).
 RP MEDLINE=91095983; PubMed=1702556;
 RA Zhu X., Komiyama H., Chitrino A., Faham S., Fox G.M., Arakawa T.,
 RA Hsu B.T., Rees D.C.;
 RT "Three-dimensional structures of acidic and basic fibroblast growth
 RT factors.";
 RL Science 251:90-93(1991).
 CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -1- SUBUNIT: MONOMER.
 CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
 CC AFGF.
 CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC -----
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 CC -----
 DR EMBL: M13440; AAA30518.1; -
 DR PIR: A24663; GKBOB.
 DR PIR: A24819; A24819.
 DR PIR: A32878; A32878.
 DR PDB: 1BAS; 3I-OCT-93.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; ILL_HBGF.
 DR Pfam: PF00167; FGF; 1.
 DR PRINTS: PR00262; ILLHBGF.
 DR ProDom: PD000831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
 KM 3D-structure.
 FT PROPEP 1 9
 FT CHAIN 10 155
 FT SITE 25 155
 FT SITE 46 48
 FT SITE 88 90
 FT BINDING 27 31
 FT BINDING 116 119
 FT STRAND 30 34
 FT TURN 35 38
 FT STRAND 39 43
 FT TURN 45 46
 FT STRAND 49 52
 FT TURN 55 56
 FT TURN 58 60
 FT HELIX 62 68
 FT STRAND 69 70
 FT TURN 71 76
 FT STRAND 77 80
 FT STRAND 81 85
 FT TURN 87 88
 FT STRAND 91 94
 FT HELIX 99 101
 FT STRAND 103 107
 FT TURN 109 110
 FT STRAND 113 117

FT TURN 121 122
 FT STRAND 124 124
 FT STRAND 127 127
 FT TURN 129 130
 FT STRAND 133 133
 FT HELIX 136 138
 FT TURN 141 142
 FT HELIX 144 146
 FT STRAND 148 151
 SO SEQUENCE 155 AA; 17250 MW; BE6CE70FA6107129 CRC64;
 Query Match 100.0%; Score 828; DB 1; Length 155;
 Best Local Similarity 100.0%; Pred. No. 6,1e-79;
 Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 MAAGSTITLPALPEDGSGAPPGHFKDKRLRYCKNGGFLRHDPGRVDGYSKSDPHI 60
 DB 1 MAAGSTITLPALPEDGSGAPPGHFKDKRLRYCKNGGFLRHDPGRVDGYSKSDPHI 60
 QY 61 KIQLQAEERGVSINKVCANRYLAMKEDGRLLASKCVTECEFFERLESNNYTSRKY 120
 DB 61 KIQLQAEERGVSINKVCANRYLAMKEDGRLLASKCVTECEFFERLESNNYTSRKY 120
 QY 121 SSWYVALKRTGQYKLGCPKTPGCKAILFLPMSAKS 155
 DB 121 SSWYVALKRTGQYKLGCPKTPGCKAILFLPMSAKS 155
 RESULT 2
 FGF2_SHEEP STANDARD; PRT; 155 AA.
 AC P20003;
 DT 01-FEB-1991 (Rel. 17, Created)
 DT 01-FEB-1996 (Rel. 33, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
 DE growth factor) (BGF) (Prostatopin).
 GN FGF2 OR FGF-2.
 OS Ovis aries (Sheep).
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
 OC Bovidae; Caprinae; Ovis.
 OX NCBI_TaxID=9940;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Sutton R., Ward W.G., Raphael K.A., Cam G.R.;
 RL Submitted (SEP-1994) to the EMBL/Genbank/DBD databases.
 RN [2]
 RP SEQUENCE OF 9-155.
 RX MEDLINE=88055577; PubMed=3678486;
 RA Simpson R.J., Moritz R.L., Lloyd C.J., Fabri L.J., Nice E.C.,
 RA Rubira M.R., Burgess A.W.;
 RT "Primary structure of ovine pituitary basic fibroblast growth
 RT factor.";
 RL FEBS Lett. 224:128-132(1987).
 CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -1- SUBUNIT: MONOMER.
 CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
 CC AFGF.
 CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC -----
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RT factors.";
 RL Science 251:90-93(1991).
 RN [14]
 RP STRUCTURE BY NMR.
 RX MEDLINE=97040521; PubMed=8885834;
 RA Moy F.J., Seddon A.P., Boehlen P., Powers R.;
 RT "High-resolution solution structure of basic fibroblast growth factor
 determined by multidimensional heteronuclear magnetic resonance
 spectroscopy.";
 RL Biochemistry 35:13552-13561(1996).
 CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -1- SUBUNIT: MONOMER.
 CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
 CC AFGF.
 CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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 CC -----
 DR EMBL; M17599; AAA52534.1; ALT_INIT.
 DR EMBL; X04431; CAA28027.1; -
 DR EMBL; X04432; CAA28028.1; -
 DR EMBL; X04433; CAA28029.1; -
 DR EMBL; M27968; AAA52448.1; -
 DR EMBL; J04513; AAA52533.1; ALT_INIT.
 DR PIR; A25824; A25824.
 DR PIR; A26642; A26642.
 DR PIR; B24243; B24243.
 DR PIR; B24301; B24301.
 DR PIR; B32878; B32878.
 DR PIR; S00297; S00297.
 DR PDB; 2EGF; 15-APR-92.
 DR PDB; 4EGF; 15-JUL-93.
 DR PDB; 1FGA; 15-JUL-93.
 DR PDB; 1BFB; 03-APR-96.
 DR PDB; 1BFC; 03-APR-96.
 DR PDB; 1BFG; 16-JUN-97.
 DR PDB; 1BFG; 31-JAN-94.
 DR PDB; 2BFH; 30-APR-94.
 DR PDB; 1BLA; 08-NOV-96.
 DR PDB; 1BLD; 08-NOV-96.
 DR MIM; 134920; -
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; IL1_HBGF.
 DR Pfam: PF00167; FGF; 1.
 DR PRINTS: PRO0062; IL1HBGF.
 DR PRODOM: PD000831; HBGF_FGF; 1.
 DR SMART; SM00442; FGF; 1.
 DR PROSITE; PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
 KW 3D-structure.
 FT PROPEP 1 9
 FT CHAIN 10 155 HEPARIN-BINDING GROWTH FACTOR 2.
 FT SITE 46 48 CELL ATTACHMENT SITE (POTENTIAL).
 FT BINDING 88 90 CELL ATTACHMENT SITE (POTENTIAL).
 FT BINDING 27 31 HEPARIN (POTENTIAL).
 FT BINDING 116 119 HEPARIN (POTENTIAL).
 FT STRAND 30 34
 FT STRAND 35 38
 FT STRAND 39 43
 FT STRAND 45 46
 FT TURN 49 52
 FT STRAND 55 56
 FT HELIX 58 60
 FT STRAND 62 66

FT TURN 69 70
 FT STRAND 71 76
 FT TURN 77 80
 FT STRAND 81 85
 FT TURN 87 88
 FT STRAND 91 94
 FT HELIX 99 101
 FT STRAND 103 107
 FT TURN 109 110
 FT STRAND 113 117
 FT TURN 121 122
 FT STRAND 124 124
 FT STRAND 127 127
 FT STRAND 129 130
 FT TURN 132 133
 FT STRAND 136 138
 FT HELIX 141 142
 FT TURN 144 146
 FT HELIX 148 152
 FT STRAND 155 AA; 17254 MM; BE6CE1373007129 CRC64;
 SO SEQUENCE

Query Match 98.7%; Score 817; DB 1; Length 155;
 Best Local Similarity 98.7%; Pred. No. 8.4e-78;
 Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY 1 MAAGSITTLPALPEDGSGAPPPGHFKDKRLCYKNGGFELIHDPDGVGVREKSDPHI 60
 DB 1 MAAGSITTLPALPEDGSGAPPPGHFKDKRLCYKNGGFELIHDPDGVGVREKSDPHI 60
 OY 61 KIQLAEEGVGVSYKGVCANRYLAKKEDGRLASLCYVDECFEERLESNNYNTRSRY 120
 DB 61 KIQLAEEGVGVSYKGVCANRYLAKKEDGRLASLCYVDECFEERLESNNYNTRSRY 120
 OY 121 SSMYVALKRTGYKLGPTGPGOKAILFLPMSAKS 155
 DB 121 TSMYVALKRTGYKLGSTGPGOKAILFLPMSAKS 155

RESULT 4
 FGF2_RAT
 ID FGF2_RAT STANDARD: PRT: 154 AA.
 AC P13109;
 DT 01-JAN-1990 (Rel. 13, Created)
 DT 01-JAN-1990 (Rel. 13, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
 DE growth factor) (BFGF) (Prostatropin).
 GN FGF2 OR FGF-2
 OS Rattus norvegicus (Rat).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
 OX NCBI_TaxID=10116;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC STRAIN-SPRAGUE-DAWLEY; TISSUE-Ovary;
 RX MEDLINE=89061721; PubMed=3196337;
 RA Shimazaki S., Emoto N., Koba A., Mercado M., Shibata F.,
 RA Cooksey K., Baird A., Ling N.;
 RT "Complementary DNA cloning and sequencing of rat ovarian basic
 RT fibroblast growth factor and tissue distribution study of its mRNA.";
 RL Biochem. Biophys. Res. Commun. 157:256-263(1988).
 RL [2]
 RP SEQUENCE FROM N.A.
 RC TISSUE-Brain;
 RX MEDLINE=88262516; PubMed=3387229;
 RA Kurokawa T., Sano M., Igarashi K.;
 RT "Nucleotide sequence of rat basic fibroblast growth factor cDNA.";
 RL Nucleic Acids Res. 16:5201-5201(1988).
 RN [3]
 RP SEQUENCE OF 1-28 FROM N.A.
 RC STRAIN-SPRAGUE-DAWLEY; TISSUE-Testis;
 RX MEDLINE=97200905; PubMed=9048734;
 RA Pasumathil K.B.S., Jin Y., Cattini P.A.;

RT "Cloning of the rat fibroblast growth factor-2 promoter region and
its response to mitogenic stimuli in glioma C6 cells.";
RT J. Neurochem. 68:898-908(1997).
RN [4]
RP SEQUENCE OF 35-154 FROM N.A.
RC STRAIN-SPRAGUE-DAWLEY; TISSUE=Brain;
RX MEDLINE=92329546; Pubmed=1378302;
RA El-Husseini A.E.D., Paterson J.A., Myal Y., Shiu R.P.C.;
RT "PCR detection of the rat brain basic fibroblast growth factor (bFGF)
mRNA containing a unique 3' untranslated region.";
RL Biochim. Biophys. Acta 131:314-316(1992).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- TISSUE SPECIFICITY: FOUND IN ALL THE TISSUES EXAMINED.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL; M22427; AAA41210.1; -;
DR EMBL; X07285; CAA30265.1; -;
DR EMBL; U78079; AAC53225.1; -;
DR EMBL; X61697; CAA43863.1; -;
DR PIR; S00876; S00876; -;
DR PIR; A31674; A31674; -;
DR HSSP; P09038; 1BFF.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR ProDom; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9
FT CHAIN 10 154 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 26 30 HEPARIN (POTENTIAL).
FT BINDING 115 118 HEPARIN (POTENTIAL).
SQ SEQUENCE 154 AA; 17139 MW; 1A0F14FF423D8403 CRC64;
Query Match 96.2%; Score 796.5; DB 1; Length 154;
Best Local Similarity 96.8%; Pred. No. 1.e-75;
Matches 150; Conservative 3; Mismatches 1; Indels 1; Gaps 1;
OY 1 MAASITTLPALPEDGGGAPPPGHFKDPKRLCYCKNGGFFLRHPDGVNDGVREKSDPHI 60
DB 1 MAASITSLPALPEDGG- GAPPGHFKDPKRLCYCKNGGFFLRHPDGVNDGVREKSDPHV 59
OY 61 KIQQAERGVVSTKGVCANRYLAMKEDGRLLASVCYDECFEERLESNNYNTYRSRKY 120
DB 60 KIQQAERGVVSTKGVCANRYLAMKEDGRLLASVCYDECFEERLESNNYNTYRSRKY 119
OY 121 SSWYVALKRTGQYKLGPTGPGOKAILFLPMSAKS 155
DB 120 SSWYVALKRTGQYKLGPTGPGOKAILFLPMSAKS 154
RESULT 5
FGF2_MOUSE STANDARD; PRT; 154 AA.
AC P15655;
DT 01-APR-1990 (Rel. 14, Created)

DT 01-APR-1990 (Rel. 14, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
growth factor) (bFGF) (Prostatropin).
GN FGF2 OR FGF-2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090.
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=90201563; Pubmed=231843;
RA Hebert J.M., Basilico C., Goldfarb M., Haub O., Martin G.R.;
RT "Isolation of cDNAs encoding four mouse FGF family members and
RT characterization of their expression patterns during embryogenesis.";
RL Dev. Biol. 138:454-463(1990).
RN [2]
RP SEQUENCE FROM N.A.
RC STRAIN=C57BL/6J, A/J, AND NOD/LtJ; TISSUE=Spleen;
RA Ma R.Z., Teuscher C.;
RL Submitted (MAY-1998) to the EMBL/GenBank/DBJ databases.
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL; M30644; AAA37621.1; -;
DR EMBL; AF065903; AAC17503.1; -;
DR EMBL; AF065904; AAC17504.1; -;
DR EMBL; AF065905; AAC17505.1; -;
DR PIR; C37360; C37360; -;
DR HSSP; P09038; 1BFF.
DR MGD; MGI:95516; Fgf2.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR ProDom; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9
FT CHAIN 10 154 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 26 30 HEPARIN (POTENTIAL).
FT BINDING 115 118 HEPARIN (POTENTIAL).
SQ SEQUENCE 154 AA; 17153 MW; 689F677416274388 CRC64;
Query Match 94.4%; Score 781.5; DB 1; Length 154;
Best Local Similarity 94.8%; Pred. No. 4.e-74;
Matches 147; Conservative 4; Mismatches 3; Indels 1; Gaps 1;
OY 1 MAASITTLPALPEDGGGAPPPGHFKDPKRLCYCKNGGFFLRHPDGVNDGVREKSDPHI 60
DB 1 MAASITSLPALPEDGGA- APPGHFKDPKRLCYCKNGGFFLRHPDGVNDGVREKSDPHV 59
OY 61 KIQQAERGVVSTKGVCANRYLAMKEDGRLLASVCYDECFEERLESNNYNTYRSRKY 120
DB 60 KIQQAERGVVSTKGVCANRYLAMKEDGRLLASVCYDECFEERLESNNYNTYRSRKY 119
OY 121 SSWYVALKRTGQYKLGPTGPGOKAILFLPMSAKS 155


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DB 121 YSNWYVALKRTGQYKLGSKTGPQAKAI.FPMSAKS 156
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RESULT 8
FGF2_RABIT STANDARD: PRT: 137 AA.
ID FGF2_RABIT
AC P48799;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 (HBGF-2) (Basic fibroblast growth
factor) (BFGF) (Prostatin) (Fragment).
GN FGF2.
OS Oryctolagus cuniculus (Rabbit).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
OX NCBI_TaxID=9986;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN-NEW ZEALAND WHITE: TISSUE-Smooth muscle;
RX MEDLINE=93343209; PubMed=8342599;
RA Winkles J.A., Friesel R., Alberts G.F., Janat M.F., Liau G.;
RT "Elevated expression of basic fibroblast growth factor in an
immortalized rabbit smooth muscle cell line.";
RL Am. J. Pathol. 143:518-527(1993).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC EMBL: L12034; AAA31248.1; -.
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBGF_FGF.
DR Pfam: PF00167; FGF; 1.
DR PRODOM: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT BINDING 18 22
FT BINDING 107 110 HEPARIN (POTENTIAL).
FT NON_TER 137 137 HEPARIN (POTENTIAL).
SQ SEQUENCE 137 AA; 15418 MW; 0D9EA57B88BC51 CRC64;

Query Match 88.9%; Score 736; DB 1; Length 137;
Best Local Similarity 99.3%; Pred. No. 1.9e-69;
Matches 136; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

DB 10 PALPEDGSGAPPGHFKDKPKRLCKNGGFFLRHHPDGRVDGVRKSDPHIKLOLAER 69
|||||
DB 1 PALPEDGSGAPPGHFKDKPKRLCKNGGFFLRHHPDGRVDGVRKSDPHIKLOLAER 60
|||||
DB 70 GYVSTKGCANRYLAMKEDGRLLASKCVTDECFFPERLESNNYNTYRSKYSWYALKR 129
|||||
DB 61 GYVSTKGCANRYLAMKEDGRLLASKCVTDECFFPERLESNNYNTYRSKYSWYALKR 120
|||||
DB 130 TGOYKLGPTGPGOKAI 146
|||||
DB 121 TGOYKLGSKTGPQAKAI 137
|||||
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```
RESULT 9
FGF2_XENLA STANDARD: PRT: 155 AA.
ID FGF2_XENLA
AC P12226;
DT 01-OCT-1989 (Rel. 12, Created)
DT 01-JAN-1990 (Rel. 13, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
growth factor) (BFGF).
GN FGF2 OR FGF-2.
OS Xenopus laevis (African clawed frog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Amphibia; Batrachia; Anura; Mesobatrachia; Piploidea; Pipidae;
OC Xenopodidae; Xenopus.
OX NCBI_TaxID=8355;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=89058621; PubMed=3194757;
RA Kimelman D., Abraham J., Haaparanta T., Palisi T., Kirschner M.;
RT "The presence of fibroblast growth factor in the frog egg: its role
as a natural mesoderm inducer.";
RL Science 242:1053-1056(1988).
RN [2]
RP SEQUENCE OF 95-155 FROM N.A.
RX MEDLINE=88052890; PubMed=3479265;
RA Kimelman D., Kirschner M.;
RT "Synergistic induction of mesoderm by FGF and TGF-beta and the
identification of an mRNA coding for FGF in the early Xenopus
embryo.";
RL Cell 51:869-877(1987).
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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or send an email to license@isb-sib.ch).
CC EMBL: M18067; AAA49726.1; -.
DR PIR: A29618; A29618.
DR PIR: A40117; A40117.
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBGF_FGF.
DR Pfam: PF00167; FGF; 1.
DR PRODOM: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9
FT CHAIN 10 155 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 27 31 HEPARIN (POTENTIAL).
FT BINDING 116 119 HEPARIN (POTENTIAL).
FT CONFLICT 111 111 MISSING (IN REF. 2).
SQ SEQUENCE 155 AA; 17241 MW; 036735C8063142FD CRC64;

Query Match 82.7%; Score 685; DB 1; Length 155;
Best Local Similarity 83.9%; Pred. No. 4.2e-64;
Matches 130; Conservative 8; Mismatches 17; Indels 0; Gaps 0;

DB 1 MAAGSTTLPALPEDGSGAPPGHFKDKPKRLCKNGGFFLRHHPDGRVDGVRKSDPHI 60
|||||
DB 1 MAAGSTTLPTSESDGNNPSPGSPKDKPKRLCKNGGFFLRHHPDGRVDGVRKSDPHI 60
|||||
DB 61 KILOLAVERGVVSIKGVCANRYLAMKEDGRLLASKCVTDECFFPERLESNNYNTYRSKRY 120
|||||
DB 61 KILOLAVERGVVSIKGVCANRYLAMKEDGRLLASKCVTDECFFPERLESNNYNTYRSKRY 120
|||||
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OY 121 SSMYVALKRTGQYKLGPKTGPGOKAILFLPMSAKS 155
DB 121 SSMYVALKRTGQYKNGSSYTPGOKAILFLPMSAKS 155

RESULT 10
FGFL_MESAU
ID FGFL_MESAU STANDARD: PRT: 155 AA.
AC P34004;
DT 01-FEB-1994 (Rel. 28, Created)
DT 01-FEB-1994 (Rel. 28, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF).
GN FGF1 OR FGF-1.
OS Mesocricetus auratus (Golden hamster).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Cricetinae;
OC Mesocricetus.
OC NCBI_TaxID=10036;
OX [1]
RN SEQUENCE FROM N.A.
RX MEDLINE=90270291; PubMed=1693366;
RA Hall J.A., Harris M.A., Malark M., Mansson P.E., Zhou H., Harris S.E.;
RT "Characterization of the hamster DDT-1 cell aFGF/HBGF-1 gene and cDNA
RT and its modulation by steroids.";
RL J. Cell. Biochem. 43:17-26(1990).
CC -1 FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1 SUBUNIT: MONOMER.
CC -1 MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES HBGF.
CC -1 SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
DR PIR: A60721; A60721.
DR HSSP: P05230; 1BML.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IIL_HBGF.
DR Pfam: PF00167; FGF; 1.
DR PRINTS: PR00262; IILHBGF.
DR PRODOM: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1
FT CHAIN 15
FT BINDING 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
FT BINDING 24 28 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
SO SEQUENCE 155 AA; 17403 MW; 41B5EC760E412CC5 CRC64;

Query Match 51.6%; Score 427.5; DB 1; Length 155;
Best Local Similarity 55.4%; Pred. No. 2,2e-37;
Matches 87; Conservative 17; Mismatches 48; Indels 5; Gaps 2;

OY 1 MAAGSITTLPALPEDGSGAAPPFGHFKDKRLYCKNGGFLLRHPDGRDVGREKSDPHI 60
DB 1 MAEGITTFSALETFRN--LPPGNVKKRKLILYCSNGHFLRLDPGTVGTRDRSDQHI 57
OY 61 KQLOAEEGCVYSIKGVCANRYLAKMEKQRLASKCYVDECFEFLRLENNNTYRSKY 120
DB 58 QLOLSAESAGEVYIKGTETGYLMDTDLGLGSDPNECEFLERLEBNHYNTYSKKH 117
OY 121 S--SWYVALKRTGQYKLGPKTGPGOKAILFLPMSAKS 155
DB 118 AEKNMFPVGLKNGSCSKRGPRTHYGOKAILFLPLPVSS 154
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DT 01-FEB-1991 (Rel. 17, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF) (Alpha-endothelial cell growth factor).
GN FGF1 OR FGF-1.
OS Gallus gallus (Chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OX NCBI_TaxID=9031;
RN [1]
RN SEQUENCE FROM N.A.
RX MEDLINE=91347925; PubMed=1715259;
RA Schnurch H., Risau W.;
RT "Differentiating and mature neurons express the acidic fibroblast
RT growth factor gene during chick neural development.";
RL Development 111:1143-1154(1991).
RN [2]
RN SEQUENCE FROM N.A.
RA Martin G.R., Han J.K.;
RL Submitted (JUL-1995) to the EMBL/Genbank/DBJ databases.
RN [3]
RX MEDLINE=88296438; PubMed=3402441;
RA Risau W., Gautschi-Sova P., Boehlen P.;
RT "Endothelial cell growth factors in embryonic and adult chick brain
RT are related to human acidic fibroblast growth factor.";
RL EMBO J. 7:959-962(1988).
CC -1 FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1 SUBUNIT: MONOMER.
CC -1 MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES HBGF.
CC -1 SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL: S63263; AAB19629.1; -.
DR EMBL: U31663; AAB80310.1; -.
DR EMBL: S63261; AAD13942.1; -.
DR PIR: S02639; S02639.
DR HSSP: P05230; 2AXM.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IIL_HBGF.
DR Pfam: PF00167; FGF; 1.
DR PRINTS: PR00262; IILHBGF.
DR PRODOM: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1
FT CHAIN 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
FT CHAIN 22 155 ENDOTHELIAL CELL GROWTH FACTOR ALPHA.
FT BINDING 24 28 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
SO SEQUENCE 155 AA; 17322 MW; 8EDB70545E2B4365 CRC64;

Query Match 50.7%; Score 419.5; DB 1; Length 155;
Best Local Similarity 55.6%; Pred. No. 1.5e-36;
Matches 85; Conservative 21; Mismatches 42; Indels 5; Gaps 2;

OY 1 MAAGSITTLPALPEDGSGAAPPFGHFKDKRLYCKNGGFLLRHPDGRDVGREKSDPHI 60
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Db      1  MAEGITTFATLTERFG---LPLGNVKKRKLILYCSNGGHFLRLDPDGKVGTRDSDOI 57
Oy      61  KLOLAEERGVSIGVCANRFLAKEDORLASKCVTDECFEERLESNNNTYRSRY 120
       :||| ||| ||| :||| :| | :||| ||| ||| ||| ||| :| |
Db      58  QLOLSAEVDGEYIKSTASGYLAMDITNLGYSQLPGECLFLERLENNHNTYISKKH 117
       : :| | | | :| | | | | | | | | | | | | | | | | |
Oy      121  S--SMYVALKRTGYKLGPKRTGPGGKAILFLPM 151
       : :| | | | :| | | | | | | | | | | | | | | | | |
Db      118  ADKNMFVGLKKNNGSKLGRTHYGOKAILFLPL 150

RESULT 12
FGFI_HUMAN
AC      P05230; P07502; STANDARD; PRT; 155 AA.
ID      FGFI_HUMAN
DT      13-AUG-1987 (Rel. 05, Created)
DT      13-AUG-1987 (Rel. 05, Last sequence update)
DT      01-MAR-2002 (Rel. 41, Last annotation update)
DE      Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE      growth factor) (AFGF) (Beta-endothelial cell growth factor) (ECGF-
DE      beta).
CN      FGFI OR FGFA.
OS      Homo sapiens (Human).
OC      Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC      Mammalia; Eutheria; Primates; Catarrhini; Homidae; Homo.
OX      NCBI_TaxID=9606;
RN      [1]
RP      SEQUENCE FROM N.A.
RX      MEDLINE=86261805; PubMed=3523756;
RA      Jaye M., Howk R., Burgess W., Ricca G.A., Chiu I.-M., Ravera M.W.,
RA      O'Brien S.J., Modi W.S., Maciag T., Drohan W.N.;
RT      "Human endothelial cell growth factor: cloning, nucleotide sequence,
RT      and chromosome localization.";
RN      Science 233:541-545(1986).
RN      [2]
RP      SEQUENCE FROM N.A.
RC      TISSUE=Brain stem;
RX      MEDLINE=89343957; PubMed=2474753;
RA      Wang W.P., Lehtoma K., Varban M.L., Krishnan I., Chiu I.M.;
RT      "Cloning of the gene coding for human class I heparin-binding growth
RT      factor and its expression in fetal tissues.";
RN      Mol. Cell. Biol. 9:2387-2395(1989).
RN      [3]
RP      SEQUENCE FROM N.A.
RC      TISSUE=Brain stem;
RX      MEDLINE=90265618; PubMed=1693186;
RA      Chiu I.M., Wang W.P., Lehtoma K.;
RT      "Alternative splicing generates two forms of mRNA coding for human
RT      heparin-binding growth factor 1.";
RN      Oncogene 5:755-762(1990).
RN      [4]
RP      SEQUENCE FROM N.A.
RX      MEDLINE=90073637; PubMed=2590193;
RA      Meglia A., Tischer E., Graves D., Tumolo A., Miller J.,
RA      Gospodarowicz D., Abraham J.A., Shipley G.D., Fiddes J.C.;
RT      "Structural analysis of the gene for human acidic fibroblast growth
RT      factor.";
RN      Biochem. Biophys. Res. Commun. 164:1121-1129(1989).
RN      [5]
RP      SEQUENCE FROM N.A.
RX      MEDLINE=92019819; PubMed=1717925;
RA      Wang W.P., Quick D., Balcerzak S.P., Needleman S.W., Chiu I.M.;
RT      "Cloning and sequence analysis of the human acidic fibroblast growth
RT      factor gene and its preservation in leukemia patients.";
RN      Oncogene 6:1521-1529(1991).
RN      [6]
RP      SEQUENCE FROM N.A.
RX      MEDLINE=92202857; PubMed=1372643;
RA      Li Y.L., Kha H., Golden J.A., Migchelsen A.A.J., Goetzel E.J.,
RA      Turk E.J.;
RT      "An acidic fibroblast growth factor protein generated by alternate
RT      splicing acts like an antagonist.";
RN      J. Exp. Med. 175:1073-1080(1992).
RN      [7]
RP      SEQUENCE OF 1-154 FROM N.A.
RX      MEDLINE=94069734; PubMed=7504343;
RA      Zhao X.M., Yeoh T.K., Hiebert M., Frist W.H., Miller G.G.;
RT      "The expression of acidic fibroblast growth factor (heparin-binding
RT      growth factor-1) and cytokine genes in human cardiac allografts and T
RT      cells.";
RN      Transplantation 56:1177-1182(1993).
RN      [8]
RP      SEQUENCE OF 1-40 FROM N.A.
RX      MEDLINE=90365758; PubMed=2393407;
RA      Crumley G., Dionne C.A., Jaye M.;
RT      "The gene for human acidic fibroblast growth factor encodes two
RT      upstream exons alternatively spliced to the first coding exon.";
RN      Biochem. Biophys. Res. Commun. 171:7-13(1990).
RN      [9]
RP      SEQUENCE OF 16-155.
RX      MEDLINE=86296647; PubMed=2427112;
RA      Harper J.W., StriDom D.J., Lobb R.R.;
RT      "Human class I heparin-binding growth factor: structure and homology
RT      to bovine acidic brain fibroblast growth factor.";
RN      Biochemistry 25:4097-4103(1986).
RN      [10]
RP      SEQUENCE OF 16-155.
RX      MEDLINE=86295741; PubMed=3527167;
RA      Gimenez-Gallego G., Conn G., Hatcher V.B., Thomas K.A.;
RT      "The complete amino acid sequence of human brain-derived acidic
RT      fibroblast growth factor.";
RN      Biochem. Biophys. Res. Commun. 138:611-617(1986).
RN      [11]
RP      SEQUENCE OF 16-155.
RX      MEDLINE=87048871; PubMed=3778488;
RA      Gautschi-Sova P., Mueller T., Boehlen P.;
RT      "Amino acid sequence of human acidic fibroblast growth factor.";
RN      Biochem. Biophys. Res. Commun. 140:874-880(1986).
RN      [12]
RP      SEQUENCE OF 16-47.
RX      MEDLINE=86186784; PubMed=3964259;
RA      Gimenez-Gallego G., Conn G., Hatcher V.B., Thomas K.A.;
RT      "Human brain-derived acidic and basic fibroblast growth factors:
RT      amino terminal sequences and specific mitogenic activities.";
RN      Biochem. Biophys. Res. Commun. 135:541-548(1986).
RN      [13]
RP      SEQUENCE OF 16-49.
RX      MEDLINE=86275260; PubMed=3732516;
RA      Gautschi P., Frater-Schroeder M., Boehlen P.;
RT      "Partial molecular characterization of endothelial cell mitogens from
RT      human brain: acidic and basic fibroblast growth factors.";
RN      FEBS Lett. 204:203-207(1986).
RN      [14]
RP      X-RAY CRYSTALLOGRAPHY (2.0 ANGSTROMS).
RX      MEDLINE=96194129; PubMed=8652550;
RA      Blaber M., Disalvo J., Thomas K.A.;
RT      "X-ray crystal structure of human acidic fibroblast growth factor.";
RN      Biochemistry 35:2086-2094(1996).
RN      [15]
RP      STRUCTURE BY NMR OF 24-155.
RX      MEDLINE=94358885; PubMed=7521397;
RA      Pineda-Lucena A., Jimenez M.A., Nieto J.L., Santoro J., Rico M.,
RA      Gimenez-Gallego G.;
RT      "1H-NMR assignment and solution structure of human acidic fibroblast
RT      growth factor activated by inositol hexasulfate.";
RN      J. Mol. Biol. 242:81-98(1994).
RN      [16]
RP      STRUCTURE BY NMR OF 24-155.
RX      MEDLINE=97107535; PubMed=8950275;
RA      Pineda-Lucena A., Jimenez M.A., Lozano R.M., Nieto J.L., Santoro J.,
RA      Rico M., Gimenez-Gallego G.;
RT      "Three-dimensional structure of acidic fibroblast growth factor in
RT      solution: effects of binding to a heparin functional analog.";
RN      J. Mol. Biol. 264:162-178(1996).
RN      [17]
RP      STRUCTURE BY NMR OF 25-155.

```

RX MEDLINE-98387896; PubMed-9719643;
 RA Lozano R.M., Jimenez M., Santoro J., Rico M., Gimenez-Galligo G.;
 RT "Solution structure of acidic fibroblast growth factor bound to 1,3,
 RT 6-naphthylmaleimidesulfonate: a minimal model for the anti-tumoral
 RT action of suramin and suradistas.";
 RL J. Mol. Biol. 281:689-915(1998).
 CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -1- SUBUNIT: MONOMER.
 CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
 CC THAN DOES bFGF.
 CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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 CC -----
 DR EMBL: M13361; AAA79245.1; -
 DR EMBL: X31943; CAA36206.1; -
 DR EMBL: M30492; AAA52446.1; -
 DR EMBL: M30490; AAA52446.1; JOINED.
 DR EMBL: M30491; AAA52446.1; JOINED.
 DR EMBL: M60515; AAA51672.1; -
 DR EMBL: M60516; AAA51673.1; -
 DR EMBL: M23087; AAA52638.1; -
 DR EMBL: M23086; AAA52638.1; JOINED.
 DR EMBL: S67291; AAB29057.2; -
 DR EMBL: X65778; CAA46661.1; -
 DR PIR: A23553; A23553.
 DR PIR: A24243; A24243.
 DR PIR: A24301; A24301.
 DR PIR: A24662; A24662.
 DR PIR: A24820; A24820.
 DR PIR: A26386; A26386.
 DR PIR: A33665; A33665.
 DR PIR: S18217; S18217.
 DR PDB: ZAFG; 15-OCT-95.
 DR PDB: JAXM; 22-APR-98.
 DR PDB: JAXM; 22-APR-98.
 DR PDB: JRM; 11-NOV-98.
 DR MIM: 131220; -
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; IIL_HBGF.
 DR Pfam: PF00167; FGF; 1.
 DR PRINTS: PR00262; IIL_HBGF.
 DR PRODOM: PD000831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding; Acetylation;
 KW 3D-structure.
 FT CHAIN 1 15 HEPARIN-BINDING GROWTH FACTOR 1.
 FT MOD_RES 2 2 ACETYLATION.
 FT BINDING 24 28 HEPARIN (POTENTIAL).
 FT BINDING 113 116 HEPARIN (POTENTIAL).
 FT SEQUENCE 155 AA; 17460 MW; F586EBFB09F1580 CRC64;
 SQ
 Query Match 50.5%; Score 418.5; DB 1; Length 155;
 Best Local Similarity 54.8%; Pred. No. 1.9e-36;
 Matches 86; Conservative 17; Mismatches 49; Indels 5; Gaps 2;
 QY 1 MAAGSTTTPALPEDGSGAFPFGHFKDKPKRYCKNGGFLRLHPDGRVGVREKSDPHI 60
 DB 1 MAEGETITFTALTEKN---LPPGNKKRKRLLKALYCSNGHGLRLRLPDGTGDTDRSDQHI 57
 QY 61 KIQLAERGVSIVKGVANRYLAMKEDGRLASKCVTDCEFFERLESNNNTYTSRKY 120

Db 58 QLOSAESVGVYTKSTETGYLMDIDGLYSGQTPNEBCLFLERLENNYNTYISKKH 117
 QY 121 S--SMYVALKRTGYKLGKPTGPOKALFLPLMSAKS 155
 Db 118 AKKMWFLKKNKSGCKRPRHYGOKALFLPLPVSS 154
 RESULT 13
 FGFL_MOUSE
 ID FGFL_MOUSE STANDARD; PRT: 155 AA.
 AC P10935;
 DT 01-JUL-1989 (Rel. 11, Created)
 DT 01-JUL-1989 (Rel. 11, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
 DE growth factor) (AFGF).
 GN FGFL OR FGF-1 OR FGFA.
 OS Mus musculus (Mouse), and
 OS Rattus norvegicus (Rat).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
 OX NCBI_TaxID=10090, 10116;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC SPECIES=Rat.
 RX MEDLINE=89240051; PubMed=2470029;
 RA Goodrich S., Yan G.C., Bahnenburg K., Mansson P.E.;
 RT "The nucleotide sequence of rat heparin binding growth factor 1
 RT (HBGF-1)."
 RL Nucleic Acids Res. 17:2867-2867(1989).
 RN [2]
 RP SEQUENCE FROM N.A.
 RC SPECIES=Mouse.
 RX MEDLINE=90201563; PubMed=2318343;
 RA Hebert J.M., Basillio C., Goldfarb M., Haub O., Martin G.R.;
 RT "Isolation of cDNAs encoding four mouse FGF family members and
 RT characterization of their expression patterns during embryogenesis.";
 RL Dev. Biol. 138:454-463(1990).
 RN [3]
 RP SEQUENCE FROM N.A.
 RC SPECIES=Mouse.
 RX MEDLINE=97128312; PubMed=8972905;
 RA Madai F., Hackshaw K.V., Chiu I.M.;
 RT "Cloning and characterization of the mouse Fgf-1 gene.";
 RL Gene 179:231-236(1996).
 RN [4]
 RP SEQUENCE FROM N.A.
 RC SPECIES=Mouse; STRAIN=BALB/C;
 RX MEDLINE=97094746; PubMed=8939980;
 RA Alam K.Y., Frostholm A., Hackshaw K.V., Evans J.E., Rotter A.,
 RA Chiu I.M.;
 RT "Characterization of the 1b promoter of fibroblast growth factor 1
 RT and its expression in the adult and developing mouse brain.";
 RL J. Biol. Chem. 271:30263-30271(1996).
 CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -1- SUBUNIT: MONOMER.
 CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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 CC -----
 DR EMBL: X14232; CAA32448.1; -
 DR EMBL: M30641; AAA37618.1; -
 DR EMBL: U36459; AAC52969.1; -

DR EMBL: U36457; AAC52969.1; JOINED.
 DR EMBL: U36458; AAC52969.1; JOINED.
 DR EMBL: U67610; AAC52907.1; JOINED.
 DR PIR: S04147; S04147.
 DR PIR: D37360; D37360.
 DR HSSP: P05230; 1RML.
 DR SWD: MGI:95515; Fgf1.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; IL1_HBGF.
 DR Pfam: PF00167; FGF; 1.
 DR PRINTS: PR00262; IL1HBGF.
 DR ProDom: PD000831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR ProSITE: PS00247; HBGF_FGF; 1.
 DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
 KW PROPEP 1 15
 FT CHAIN 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
 FT BINDING 24 28 HEPARIN (POTENTIAL).
 FT BINDING 113 116 HEPARIN (POTENTIAL).
 SQ SEQUENCE 155 AA; 17418 MW; 8880E4FF0FB4161 CRC64;

Query Match 49.9%; Score 413.5; DB 1; Length 155;
 Best Local Similarity 54.1%; Pred. No. 6; 3e-36;
 Matches 85; Conservative 18; Mismatches 49; Indels 5; Gaps 2;

OY 1 MAGSTTLPALPEDGSGAPPGHFKDPKRLKCKNGGFELIHPDGRVDGVRKSDPHI 60
 DB 1 MAGEITTFALTERRN--LPGNKKPKLLYCSNGHFLNLPDGYDGRSDQHI 57
 OY 61 KLQLOAERGVVSIKVCANRYLAMKEDGRLASKCVTDECFEFERLESNNNTYRSRY 120
 DB 58 QLOLSAESGEVYIKSTETGYQLAMDTGSLXGQTPSECELFLELBNHNTYTSKHH 117
 OY 121 S--SWYVALKRTGYKLGKTPGGOKAILFLPM 151
 DB 118 AEKNMFVGLKNGSCRKGRPTHYGOKAILFLPLPVSS 154

RESULT 14
 FGF1_PIG STANDARD; PRT; 152 AA.
 AC P20002;
 DT 01-FEB-1991 (Rel. 17, Created)
 DT 01-FEB-1996 (Rel. 33, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 1 precursor (HBGF-1) (acidic fibroblast growth factor) (AFGF) (Alpha-endothelial cell growth factor) (Fragment).
 DE GNF1 OR FGF-1.
 OS Sus scrofa (Pig).
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Suina; Suidae; Sus.
 NCBI_TaxID=9823;
 RN NCBI_TaxID=9823;
 RP SEQUENCE FROM N.A.
 RC TISSUE=Heart;
 RX MEDLINE=92062117; PubMed=1719973;
 RA Schmidt M., Sharma H.S., Schott R.J., Schaper W.;
 RT "Amplification and sequencing of mRNA encoding acidic fibroblast growth factor (afgf) from porcine heart."
 DE Blochem. Biophys. Res. Commun. 180:853-859(1991).
 RN [2]
 RP SEQUENCE OF 22-41.
 RX MEDLINE=89231704; PubMed=2714282;
 RA Quinkler W., Maasberg M., Bernotat-Danielowski S., Luethe N.,
 RA Sharma H.S., Schaper W.;
 RT "Isolation of heparin-binding growth factors from bovine, porcine and canine hearts."
 DE Eur. J. Biochem. 181:67-73(1989).
 CC -!- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND

CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -!- SUBUNIT: MONOMER.
 CC -!- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY THAN DOES BPGF.
 CC -!- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC -----
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 CC -----
 DR EMBL: X60317; CAA42869.1; JOINED.
 DR PIR: S03954; S03954.
 DR HSSP: P05230; 2AXM.
 DR InterPro: IPR002209; HBGF_FGF.
 DR Pfam: PF00167; FGF; 1.
 DR ProDom: PD000831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR ProSITE: PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
 KW PROPEP 1 15
 FT CHAIN 16 >152 HEPARIN-BINDING GROWTH FACTOR 1.
 FT BINDING 22 >152 ENDOTHELIAL CELL GROWTH FACTOR ALPHA.
 FT BINDING 113 116 HEPARIN (POTENTIAL).
 FT CONFLICT 31 31 C -> S (IN REF. 2).
 FT CONFLICT 39 39 R -> Y (IN REF. 2).
 FT NON_TER 152
 SQ SEQUENCE 152 AA; 17103 MW; AE853B0A2F9ABF4 CRC64;

Query Match 49.8%; Score 412.5; DB 1; Length 152;
 Best Local Similarity 54.9%; Pred. No. 7; 8e-36;
 Matches 84; Conservative 18; Mismatches 46; Indels 5; Gaps 2;

OY 1 MAGSTTLPALPEDGSGAPPGHFKDPKRLKCKNGGFELIHPDGRVDGVRKSDPHI 60
 DB 1 MAGEITTFALTERRN--LPGNKKPKLLYCSNGHFLNLPDGYDGRSDQHI 57
 OY 61 KLQLOAERGVVSIKVCANRYLAMKEDGRLASKCVTDECFEFERLESNNNTYRSRY 120
 DB 58 QLOLSAESGEVYIKSTETGYQLAMDTGSLXGQTPSECELFLELBNHNTYTSKHH 117
 OY 121 S--SWYVALKRTGYKLGKTPGGOKAILFLPM 151
 DB 118 AEKNMFVGLKNGSCRKGRPTHYGOKAILFLPL 150

RESULT 15
 FGF1_BOVIN STANDARD; PRT; 155 AA.
 AC P03968;
 DT 23-OCT-1986 (Rel. 02, Created)
 DT 01-MAR-1989 (Rel. 10, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 1 precursor (HBGF-1) (acidic fibroblast growth factor) (AFGF) (Prostatepin) (Endothelial cell growth factor beta and alpha chains) (Acidic eye-derived growth factor II) (EDGF II).
 DE GNF1 OR FGF-1 OR FGFA OR HBGF-1 OR ARGF.
 OS Bos taurus (Bovine).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae; Bovidae; Bovinae; Bos.
 NCBI_TaxID=9913;
 RN NCBI_TaxID=9913;
 RP SEQUENCE FROM N.A.
 RC TISSUE=Retina;
 RX MEDLINE=89083506; PubMed=3205724;
 RA Halley C., Courtois Y., Laurent M.;

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:46:13 ; Search time 78.17 Seconds

(without alignments)
343.024 Million cell updates/sec

Title: US-09-802-365-6

Perfect score: 828
Sequence: 1 MAASITTLPALPEDGSGA.....GPRGPGQKALFLPMASAKS 155

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 562222 seqs, 172994929 residues

Total number of hits satisfying chosen parameters: 562222

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%

Listing first 45 summaries

Database :

SPTREMBL_19:*
1: sp_archaea:*
2: sp_bacteria:*
3: sp_fungi:*
4: sp_human:*
5: sp_invertebrate:*
6: sp_mammal:*
7: sp_mhc:*
8: sp_organelle:*
9: sp_phage:*
10: sp_plant:*
11: sp_rodent:*
12: sp_virus:*
13: sp_vertebrate:*
14: sp_unclassified:*
15: sp_virus:*
16: sp_bacteriophage:*
17: sp_archaeal:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	817	98.7	196	4 P78443	P78443 homo sapien
2	766	92.5	153	11 Q925A3	Q925A3 mus musculu
3	740	89.4	170	11 Q60487	Q60487 cavia porce
4	702	84.8	155	13 Q90Y92	Q90Y92 cynops pyrr
5	693	83.7	130	6 Q77767	Q77767 canis famli
6	576	69.6	111	6 Q9BDX1	Q9BDX1 macaca mula
7	572	69.1	108	6 Q9N1S7	Q9N1S7 capreolus c
8	565	68.2	125	13 Q98RD8	Q98RD8 cynops pyrr
9	488	58.9	109	11 Q925A1	Q925A1 mus musculu
10	484	58.5	112	11 Q925A2	Q925A2 mus musculu
11	480.5	57.9	146	13 Q07659	Q07659 gallus gall
12	479	57.9	101	13 P79706	P79706 cynops pyrr
13	342	41.3	76	6 Q9N0V2	Q9N0V2 oviss aries
14	328	39.6	114	4 Q00527	Q00527 homo sapien
15	328	39.6	114	4 Q16443	Q16443 homo sapien
16	300	36.2	106	6 Q9N1S8	Q9N1S8 capreolus c

17	246	29.7	196	13 Q9YH31	Q9YH31 notophthalm
18	242	29.2	124	13 Q90X05	Q90X05 ambystoma m
19	228	27.5	206	13 Q9YGD8	Q9YGD8 oncorhynch
20	221	26.7	111	13 Q90X01	Q90X01 ambystoma m
21	215	26.0	208	6 Q951J2	Q951J2 sus scrofa
22	210	25.4	191	13 Q9DRC9	Q9DRC9 brachydanio
23	207	25.0	208	13 Q9PYV1	Q9PYV1 xenopus lae
24	207	25.0	212	11 Q9ESL9	Q9ESL9 mus musculu
25	205.5	24.8	207	11 Q9ESL8	Q9ESL8 mus musculu
26	205.5	24.8	207	11 Q9ER05	Q9ER05 mus musculu
27	203	24.5	208	6 Q95K97	Q95K97 macaca fasc
28	203	24.5	212	11 Q9EST9	Q9EST9 rattus norv
29	202.5	24.5	212	13 Q42407	Q42407 gallus gall
30	195.5	23.6	134	13 Q90X03	Q90X03 ambystoma m
31	194.5	23.5	213	6 Q9N1B9	Q9N1B9 oviss aries
32	193	23.3	208	4 Q96P59	Q96P59 homo sapien
33	188	22.7	112	13 Q90XP9	Q90XP9 ambystoma m
34	186.5	22.5	186	6 Q95L47	Q95L47 mustela vis
35	186.5	22.5	237	13 Q91A16	Q91A16 gallus gall
36	185.5	22.4	252	11 Q89096	Q89096 rattus norv
37	185.5	22.4	253	13 Q91A15	Q91A15 gallus gall
38	183.5	22.2	59	4 Q9UBK1	Q9UBK1 homo sapien
39	180.5	21.8	185	11 Q9ERN5	Q9ERN5 rattus norv
40	177.5	21.4	181	11 Q924B4	Q924B4 rattus norv
41	176.5	21.3	127	4 Q99517	Q99517 homo sapien
42	175.5	21.2	302	11 Q9CSX5	Q9CSX5 mus musculu
43	174.5	21.1	59	4 Q16089	Q16089 homo sapien
44	174.5	21.1	60	4 Q16588	Q16588 homo sapien
45	172.5	20.8	199	13 Q91A13	Q91A13 gallus gall

ALIGNMENTS

RESULT	ID	PRELIMINARY	PRT	196 AA.
P78443	P78443			
AC	P78443			
DT	01-MAY-1997 (TREMBLrel. 03, Created)			
DT	01-MAY-1997 (TREMBLrel. 03, Last sequence update)			
DT	01-JUN-2001 (TREMBLrel. 17, Last annotation update)			
DE	21 KDA BASIC FIBROBLAST GROWTH FACTOR (BFGF).			
GN	BFGF2.			
OS	Homo sapiens (Human).			
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;			
OC	Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.			
OX	NCBI_TaxID=9606;			
RN	[1]			
RP	SEQUENCE FROM N.A.			
RX	MEDLINE=89184522; PubMed=2538817;			
RA	Prats H., Kaghad M., Prats A.C., Klagsbrun M., Lelias J.M.,			
RT	Thomas E.J.;			
RT	"Reverse transcription with nested polymerase chain reaction shows			
RT	expression of basic fibroblast growth factor transcripts in human			
RT	granulosa and cumulus cells from in vitro fertilisation patients.";			
RL	Biochem. Biophys. Res. Commun. 187:1227-1231(1992).			
DR	EMBL; J04513; AAA52532.1; -			
DR	EMBL; S47380; AAD13853.1; -			
DR	HSSP; P09038; 1BFF.			
DR	InterPro; IPR002209; HBGF_FGF.			
DR	InterPro; IPR002348; IL1_HBGF.			
DR	Pfam; PF00167; FGF_1.			
DR	PRINTS; PR00262; IL1HBGF.			
DR	ProDom; PD000831; HBGF_FGF; 1.			
DR	SMART; SM00442; FGF; 1.			

DR PROSITE; PS00247; HBGF_FGF; 1.
SQ SEQUENCE 196 AA; 21203 MW; D6B5447137E60343 CRC64;

Query Match 98.7%; Score 817; DB 4; Length 196;
Best Local Similarity 98.7%; Pred. No. 4e-81;
Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 1 MAAGSITLPALEPDGSGAFPPGHFKDKRLCYCKNGGFRLRIHPDGVGVREKSDPHI 60
|||||
DB 42 MAAGSITLPALEPDGSGAFPPGHFKDKRLCYCKNGGFRLRIHPDGVGVREKSDPHI 101
|||||

QY 61 KLOLQAEERGVVSTKGVCANRYLAKMEDEGRLLASCVTDECFPERLESNNYNTYRSRKY 120
|||||
DB 102 KLOLQAEERGVVSTKGVCANRYLAKMEDEGRLLASCVTDECFPERLESNNYNTYRSRKY 161
|||||

QY 121 SSWYVALKRTGQYKLGPTGPGOKAILFLPMSAKS 155
|
DB 162 TSWYVALKRTGQYKLGPTGPGOKAILFLPMSAKS 196
|

RESULT 2
Q925A3 PRELIMINARY; PRT; 153 AA.

AC Q925A3;
DT 01-DEC-2001 (TREMBlrel, 19, Created)
DT 01-DEC-2001 (TREMBlrel, 19, Last sequence update)
DT 01-DEC-2001 (TREMBlrel, 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
GN FGF2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_Taxid=10090;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=FVB/N.
RA Dicks R.P., Griep A.E.;
RT "Multiple novel variants of fibroblast growth factor 2 transcripts are
RT expressed in mouse embryos."
RL Submitted (FEB-2001) to the EMBL/GenBank/DBJ databases.
DR EMBL: AY027551; AAK52308.1; -
SQ SEQUENCE 153 AA; 17024 MW; AD8163CDBF2AFAB CRC64;

Query Match 92.5%; Score 766; DB 11; Length 153;
Best Local Similarity 94.2%; Pred. No. 1.1e-75;
Matches 146; Conservative 4; Mismatches 3; Indels 2; Gaps 2;

QY 1 MAAGSITLPALEPDGSGAFPPGHFKDKRLCYCKNGGFRLRIHPDGVGVREKSDPHI 60
|||||
DB 1 MAAGSITLPALEPDGGA-APPPGHFKDKRLCYCKNGGFRLRIHPDGVGVREKSDPHV 59
|||||

QY 61 KLOLQAEERGVVSTKGVCANRYLAKMEDEGRLLASCVTDECFPERLESNNYNTYRSRKY 120
|||||
DB 60 KLOLQAEERGVVSTKGVCANRYLAKMEDEGRLLAS-CTVEECFFERLESNNYNTYRSRKY 118
|||||

QY 121 SSWYVALKRTGQYKLGPTGPGOKAILFLPMSAKS 155
|
DB 119 SSWYVALKRTGQYKLGPTGPGOKAILFLPMSAKS 153
|

RESULT 3
Q60487 PRELIMINARY; PRT; 170 AA.

AC Q60487;
DT 01-NOV-1996 (TREMBlrel, 01, Created)
DT 01-MAY-2000 (TREMBlrel, 13, Last sequence update)
DT 01-JUN-2001 (TREMBlrel, 17, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2 (FGF-2) (FIBROBLAST GROWTH FACTOR, BASIC)
DE (HBGF) (HEPARIN-BINDING GROWTH FACTOR 2) (HBGF-2) (PROSTATROPIN)
DE (PROSTATIC GROWTH FACTOR) (FRAGMENTS).
GN FGF2.

OS Cavia porcellus (Guinea pig).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Hystricognathi; Cavidae; Cavia.
OX NCBI_Taxid=10141;
RN [1]
RP SEQUENCE OF 53-170 FROM N.A.
RC TISSUE=PROSTATE;
RA Ricciardelli C.;
RL Submitted (JAN-1996) to the EMBL/GenBank/DBJ databases.
RN [2]
RP SEQUENCE OF N-TERMINUS, PARTIAL SEQUENCE, AND ALTERNATIVE SPLICING.
RX MEDLINE=69273588; PubMed=2730645;
RA Sommer A., Moscoteelli D., Rifkin D.B.;
RT "An amino-terminally extended and post-translationally modified form
RT of a 25kd basic fibroblast growth factor."
RL Biochem. Biophys. Res. Commun. 160:1267-1274(1989).
RN [3]
RP PARTIAL SEQUENCE, AND METHYLATION.
RX MEDLINE=91322114; PubMed=1713785;
RA Burgess W.H., Bizik J., Mehman T., Quarto N., Rifkin D.B.;
RT "Direct evidence for methylation of arginine residues in high
RT molecular weight forms of basic fibroblast growth factor."
RL Cell Regul. 2:87-93(1991).
RN [4]
RP CHARACTERIZATION.
RC TISSUE=BRIN;
RX MEDLINE=87289686; PubMed=3475702;
RA Moscoteelli D., Joseph-Silverstein J., Manejias R., Rifkin D.B.;
RT "Mr 25,000 heparin-binding protein from guinea pig brain is a high
RT molecular weight form of basic fibroblast growth factor."
RL Proc. Natl. Acad. Sci. U.S.A. 84:5778-5782(1987).
RN [5]
RP FUNCTION: WIDE-SPECTRUM MITOGENIC, ANGIOGENIC, AND NEUROTROPHIC
RP FACTOR. IMPLICATED IN A MULTITUDE OF PHYSIOLOGIC AND PATHOLOGIC
RP PROCESSES, INCLUDING LIMB DEVELOPMENT, ANGIOGENESIS, WOUND
RP HEALING, AND TUMOR GROWTH. POTENT MITOGEN AND CHEMOATTRACTANT FOR
RP MESENCHYME-DERIVED CELLS. IMPLICATED IN THE DIFFERENTIATION,
RP PROLIFERATION, AND MAINTENANCE OF CELLS IN THE CENTRAL NERVOUS
RP SYSTEM AND IN BONE FORMATION. MAJOR ANGIOGENIC FACTOR THAT ALSO
RP ACTIVATES TUMOR NEOVASCULARIZATION (BY SIMILARITY).
CC -1 SUBUNIT: FORMS A QUATERNARY COMPLEX WITH TWO FGFR1 AND AT LEAST
CC ONE HEPARAN SULFATE (BY SIMILARITY).
CC -1 ALTERNATIVE PRODUCTS: AT LEAST TWO ISOFORMS: 18 KDA AND 25 KDA
CC (SHOWN HERE); MAY BE PRODUCED BY USE OF ALTERNATIVE TRANSLATION
CC INITIATION SITES. BOTH FORMS ARE ACTIVE.
CC -1 PTM: THE N-TERMINAL OF ISOFORM 18 KDA IS BLOCKED (PROBABLY).
CC -1 SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -1 CAUTION: THIS IS A CONCEPTUAL TRANSLATION; MANY FRAMESHIFTS WERE
CC INTRODUCED FROM RESIDUES 77, 88, 93 AND 149 DOWNWARD TO EXTEND THE
CC SIMILARITY TO THE HUMAN SEQUENCE AS WELL AS ON THE BASIS OF
CC PARTIAL AMINO-ACID SEQUENCING.
DR EMBL: L75974; AAB85394.1; ALT_FRAME.
DR HSSP: P09038; 1BLA.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PRO0262; IL1HBGF.
DR ProDom: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Vascularization; Heparin-binding;
KW Alternative initiation; Methylation; Phosphorylation;
KW developmental protein.
FT NON_TER 1
FT NON_CONS 15
FT CHAIN <1 170
FT CHAIN 22 170
FT INT_MET 22 22
FT DOMAIN 11 14
FT NON_CONS 50 51
FT SITE 61 63
FT SITE 103 105
FT BINDING 50 51
FT BINDING 105 105

25 KDA BASIC FIBROBLAST GROWTH FACTOR.
FOR 18 KDA BASIC FIBROBLAST GROWTH FACTOR.
POLY-ALA.
CELL ATTACHMENT SITE (POTENTIAL).
CELL ATTACHMENT SITE (POTENTIAL).
HEPARIN (BY SIMILARITY).
HEPARIN (BY SIMILARITY).

FT BINDING 143 159 HEPARIN (BY SIMILARITY).
 FT MOD_RES 4 4 METHYLATION (MONO- OR DI-).
 FT MOD_RES 6 6 METHYLATION (MONO- OR DI-).
 FT MOD_RES 8 8 METHYLATION (MONO- OR DI-).
 FT MOD_RES 88 88 PHOSPHORYLATION (BY SIMILARITY).
 FT MOD_RES 136 136 PHOSPHORYLATION (BY SIMILARITY).
 SO SEQUENCE 170 AA; 18354 MW; F36BDBC7365FE5FEBE CRC64;

Query Match 89.4%; Score 740; DB 11; Length 170;
 Best Local Similarity 91.6%; Pred. No. 8.3e-73;
 Matches 142; Conservative 2; Mismatches 5; Indels 6; Gaps 1;

OY 1 MAAGSITLPLALPEDGSGAFPPGHFKDPKRLYCKNGGFLRIHPDGRVGVREKSDPHI 60
 DB 22 MAAGSITLPLALPEDGSGAFARHFKDP-----NGGFLRIHPDGRVGVREKSDPHI 75
 OY 61 KIQLAERGVVSIKGVCANRYLAKMEDGRLLASCVTDECFEERLESNNYNTYRSRY 120
 DB 76 KIQLAERGVVSIKGVCANRYLAKMEDGRLLASCVTDECFEERLESNNYNTYRSRY 135
 OY 121 SSMYVALKRTGOYKLGPKTPGOKAILFLPMSAKS 155
 DB 136 SSMYVALKRTGOYKLGSKTPGOKAILFLPMSAKS 170

RESULT 4
 O90Y92 PRELIMINARY; PRT; 155 AA.
 AC O90Y92;
 DT 01-DEC-2001 (TREMBLrel. 19, Created)
 DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)
 DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
 DE FIBROBLAST GROWTH FACTOR-2.
 GN FGF-2.
 OS Cynops pyrrhogaster (Japanese common newt).
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
 OC Amphibia; Batrachia; Caudata; Salamandridae; Cynops.
 OC NCBI_TaxID=8330;
 RN [1]
 RP SEQUENCE FROM N.A.
 RA Susaki K., Nakamura K., Chiba C., Saito T.;
 RT "Expression of FGF2 during newt retinal development and
 regeneration."
 RL Submitted (JUL-2001) to the EMBL/GenBank/DBJ databases.
 DR EMBL: AB064664; BAB63249.1; -
 SO SEQUENCE 155 AA; 17278 MW; 2B583058538A8BD9 CRC64;

Query Match 84.8%; Score 702; DB 13; Length 155;
 Best Local Similarity 85.8%; Pred. No. 1e-68;
 Matches 133; Conservative 8; Mismatches 14; Indels 0; Gaps 0;

OY 1 MAAGSITLPLALPEDGSGAFPPGHFKDPKRLYCKNGGFLRIHPDGRVGVREKSDPHI 60
 DB 1 MAAGSITLPLALPEDGNGSTFTPPGFKRKYCKNGGFLRINSKVGAKREKSDSYI 60
 OY 61 KIQLAERGVVSIKGVCANRYLAKMEDGRLLASCVTDECFEERLESNNYNTYRSRY 120
 DB 61 KIQLAERGVVSIKGVCANRYLAKMEDGRLLAKWITDECFEERLESNNYNTYRSRY 120
 OY 121 SSMYVALKRTGOYKLGPKTPGOKAILFLPMSAKS 155
 DB 121 SSMYVALKRTGOYKNGSKTGACOKAILFLPMSAKS 155

RESULT 5
 O77767 PRELIMINARY; PRT; 130 AA.
 AC O77767;
 DT 01-NOV-1998 (TREMBLrel. 08, Created)
 DT 01-NOV-1998 (TREMBLrel. 08, Last sequence update)
 DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)

DE BASIC FIBROBLAST GROWTH FACTOR (BFGF) (FGF-2) (HEPARIN-BINDING GROWTH
 DE FACTOR 2) (HGF-2) (PROSTATROPIN) (PROSTATIC GROWTH FACTOR)
 DE (FRAGMENT).
 GN BFGF.
 OS Canis familiaris (dog).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
 OC Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.
 OX NCBI_TaxID=9615;
 RN [1]
 RP SEQUENCE FROM N.A.

RC TISSUE=ADRENAL GLAND;
 RA Trocha O.A., Jacobs R.M., Lamare J.;
 RT "The role bfgf in canine Hemangiosarcoma."
 RL Submitted (APR-1998) to the EMBL/GenBank/DBJ databases.
 CC -I- FUNCTION: WIDE-SPECTRUM MITOGENIC, ANGIOGENIC, AND NEUROPROPHIC
 CC FACTOR. IMPLICATED IN A MULTITUDE OF PHYSIOLOGIC AND PATHOLOGIC
 CC PROCESSES, INCLUDING LIMB DEVELOPMENT, ANGIOGENESIS, WOUND
 CC HEALING, AND TUMOR GROWTH. POTENT MITOGEN AND CHEMOATTRACTANT FOR
 CC MESENCHYME-DERIVED CELLS. IMPLICATED IN THE DIFFERENTIATION,
 CC PROLIFERATION, AND MAINTENANCE OF CELLS IN THE CENTRAL NERVOUS
 CC SYSTEM AND IN BONE FORMATION. MAJOR ANGIOGENIC FACTOR THAT ALSO
 CC ACTIVATES TUMOR NEOVASCULARIZATION (BY SIMILARITY).
 CC -I- SUBUNIT: FORMS A QUATERNARY COMPLEX WITH TWO FGF1 AND AT LEAST
 CC ONE HEPARIN SULFATE (BY SIMILARITY).
 CC -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC EMBL: AF060562; AAC35912.1; -
 DR HSSP: P09038; 1BFE.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; ILL_HBGF.
 DR Pfam: PF00167; FGF; 1.
 DR PRINTS: PR00262; ILLHBGF.
 DR ProDom: PD000831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KM Growth factor; Mitogen; Vascularization; Heparin-binding;
 KM Phosphorylation; Developmental protein.
 FT NON_TER 1 1
 FT SITE 1 23 CELL ATTACHMENT SITE (POTENTIAL).
 FT SITE 63 65 CELL ATTACHMENT SITE (POTENTIAL).
 FT BINDING 10 11 HEPARIN (BY SIMILARITY).
 FT BINDING 65 65 HEPARIN (BY SIMILARITY).
 FT BINDING 103 119 HEPARIN (BY SIMILARITY).
 FT MOD_RES 48 48 PHOSPHORYLATION (BY SIMILARITY).
 FT MOD_RES 96 96 PHOSPHORYLATION (BY SIMILARITY).
 FT NON_TER 130 130
 SO SEQUENCE 130 AA; 14902 MW; 21900876E878FAEA CRC64;

Query Match 83.7%; Score 693; DB 6; Length 130;
 Best Local Similarity 99.2%; Pred. No. 7.9e-68;
 Matches 129; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

OY 26 FNDPRKLYCKNGGFLRIHPDGRVGVREKSDPHIKIQLAERGVVSIKGVCANRYLAM 85
 DB 1 FNDPRKLYCKNGGFLRIHPDGRVGVREKSDPHYKLIQLAERGVVSIKGVCANRYLAM 60
 OY 86 KEDGRLLASCVTDECFEERLESNNYNTYRSRYSSWYVALKRTGOYKLGPKTPGOKA 145
 DB 61 KEDGRLLASCVTDECFEERLESNNYNTYRSRYSSWYVALKRTGOYKLGPKTPGOKA 120

OY 146 ILLPMSAKS 155
 DB 121 ILLPMSAKS 130

RESULT 6
 Q9BDX1 PRELIMINARY; PRT; 111 AA.
 AC Q9BDX1;
 DT 01-JUN-2001 (TREMBLrel. 17, Created)
 DT 01-JUN-2001 (TREMBLrel. 17, Last sequence update)
 DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
 DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).

OS Macaca mulatta (Rhesus macaque).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecoidea;
OC Cercopithecoidea; Macaca.
NCBI_TaxID=9544;
[1]
RP SEQUENCE FROM N.A.
RA Sekhon H.S., Keller J.K., Spindel E.R.;
RT "Alterations in Collagen and Elastin Gene Expression in Fetal
RT Pulmonary Vessels in Monkeys Following Prenatal Nicotine Exposure: A
RT Possible Role of alpha7 Nicotinic Acetylcholine Receptor in Persistent
RT Submitted (MAR-2000) to the EMBL/Genbank/DBJ databases.
RL EMBL: AF251270; AAK37962.1; -
DR HSSP: P09038; 2FGF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF; 1.
DR PRINTS: PR00262; IL1HBGF.
DR ProDom: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
FT NON_TER 1 111
FT NON_TER 111 111
SQ SEQUENCE 111 AA; 12633 MW; EC0967A5261F5487 CRC64;

Query Match 69.6%; Score 576; DB 6; Length 111;
Best Local Similarity 98.2%; Pred. No. 3.7e-55;
Matches 109; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 43 IHPDGRVGVREKSDPHIKLQDAEERGVSIRKVCANRYLAKMEDGRLLAKSCVTDEC 102
DB 1 IHPDGRVGVREKSDPHIKLQDAEERGVSIRKVCANRYLAKMEDGRLLAKSCVTDEC 60
QY 103 FFERLESNNYNTYRSKRYSSWYVALKRTGQYKLGKPTGGQKAILFLPMSA 153
DB 61 FFERLESNNYNTYRSKRYSSWYVALKRTGQYKLGKPTGGQKAILFLPMSA 111
RESULT 7
Q9N1S7 PRELIMINARY; PRT; 108 AA.
AC Q9N1S7;
DT 01-OCT-2000 (TREMBLrel. 15, Created)
DT 01-OCT-2000 (TREMBLrel. 15, last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
GN BFGF.
OS Capreolus capreolus (Roe deer).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Cervidae;
OC Cervidae; Odocoileinae; Capreolus.
NCBI_TaxID=9858;
[1]
RP SEQUENCE FROM N.A.
RA TISSUE-TESTIS;
RX MEDLINE=20532861; PubMed=11078967;
RA Wagner A., Blotner S., Goritz F., Fickel J.;
RT "Detection of growth factors in the testis of roe deer (Capreolus
RT capreolus).";
RL Anlm. Reprod. Sci. 64:65-75(2000).
DR EMBL: AF152587; AAF73226.1; -
DR HSSP: P09038; 4FGF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF; 1.
DR PRINTS: PR00262; IL1HBGF.
DR ProDom: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
FT NON_TER 1 108
FT NON_TER 108 108

SQ SEQUENCE 108 AA; 12399 MW; 6BC7B7244214567E CRC64;

Query Match 69.1%; Score 572; DB 6; Length 108;
Best Local Similarity 100.0%; Pred. No. 9.8e-55;
Matches 108; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 42 RIHPDGRVGVREKSDPHIKLQDAEERGVSIRKVCANRYLAKMEDGRLLAKSCVTDEC 101
DB 1 RIHPDGRVGVREKSDPHIKLQDAEERGVSIRKVCANRYLAKMEDGRLLAKSCVTDEC 60
QY 102 FFERLESNNYNTYRSKRYSSWYVALKRTGQYKLGKPTGGQKAILFL 149
DB 61 FFERLESNNYNTYRSKRYSSWYVALKRTGQYKLGKPTGGQKAILFL 108

RESULT 8
Q98TD8 PRELIMINARY; PRT; 125 AA.
AC Q98TD8;
DT 01-JUN-2001 (TREMBLrel. 17, Created)
DT 01-JUN-2001 (TREMBLrel. 17, last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, last annotation update)
DE FIBROBLAST GROWTH FACTOR-2 (FRAGMENT).
GN FGF-2.
OS Cynops pyrrhogaster (Japanese common newt).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Caudata; Salamandridae; Salamandridae; Cynops.
NCBI_TaxID=8330;
[1]
RP SEQUENCE FROM N.A.
RA Mizuno N., Hayashi T., Konoh H., Okamoto M.;
RT "Cynops fibroblast growth factor-2";
RT Submitted (OCT-2000) to the EMBL/Genbank/DBJ databases.
RL EMBL: AB049625; BAB40835.1; -
DR HSSP: P09038; 1BFGF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF; 1.
DR PRINTS: PR00262; IL1HBGF.
DR ProDom: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
FT NON_TER 1 1
FT NON_TER 1 1
SQ SEQUENCE 125 AA; 14244 MW; 5C27F41DC6E60C13 CRC64;

Query Match 68.2%; Score 565; DB 13; Length 125;
Best Local Similarity 87.1%; Pred. No. 6.8e-54;
Matches 108; Conservative 6; Mismatches 10; Indels 0; Gaps 0;

QY 32 LYCKNGGFRLRIHPDGRVGVREKSDPHIKLQDAEERGVSIRKVCANRYLAKMEDGR 91
DB 2 LYCKNGGFRLRINSQKVGAREKSDSYIKLQDAEERGVSIRKVCANRYLAKMEDGR 61
QY 92 LASKCVTDECFFERLESNNYNTYRSKRYSSWYVALKRTGQYKLGKPTGGQKAILFLP 151
DB 62 MALKWITDECFFERLESNNYNTYRSKRYSSWYVALKRTGQYKLGKPTGGQKAILFLP 121
QY 152 SAKS 155
DB 122 SAKS 125
RESULT 9
Q925A1 PRELIMINARY; PRT; 109 AA.
AC Q925A1;
DT 01-DEC-2001 (TREMBLrel. 19, Created)
DT 01-DEC-2001 (TREMBLrel. 19, last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
GN FGF2.


```
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IL1HBGF.
DR ProDom: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
FT NON_TER 1
FT NON_TER 101
SQ SEQUENCE 101 AA; 11907 MW; 74A16C866C1F457A CRC64;

Query Match 57.9%; Score 479; DB 13; Length 101;
Best Local Similarity 88.1%; Pred. No. 1.2e-44;
Matches 89; Conservative 6; Mismatches 6; Indels 0; Gaps 0;

QY 29 PKRLCKNGGFLRHPDGVYREKSDPKIKLOLAEEGRGVSIKVCANRYLAMKED 88
DB 1 PKRLCKNGGFLRHPDGVYREKSDPKIKLOLAEEGRGVSIKVCANRYLAMKED 60

QY 89 GRLLASKCVTDECFEFLERLESNNYRNRYSRRYSWYVALKR 129
DB 61 GRLLASKCVTDECFEFLERLESNNYRNRYSRRYSWYVALKR 101

RESULT 13
ID 09NOV2 PRELIMINARY; PRT; 76 AA.
AC 09NOV2;
DT 01-OCT-2000 (TREMblrel. 15, Created)
DT 01-OCT-2000 (TREMblrel. 15, Last sequence update)
DT 01-DEC-2001 (TREMblrel. 19, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
GN FGF-2.
OS Ovis aries (Sheep).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
OC Bovidae; Caprinae; Ovis.
OX NCBI_TaxID=9940;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=FETAL PLACENTAL ARTERY;
RA Zheng J., Tsai S.C., Magnus R.R.;
RT "Growth factor expression in ovine fetal placental artery endothelial
RT cells."
RL Submitted (MAR-2000) to the EMBL/GenBank/DBJ databases.
DR EMBL: AF250027; AAF65566.1; -.
DR HSSP: P09038; AFGF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; IL1HBGF.
DR ProDom: PD000831; HBGF_FGF_1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF_1.
FT NON_TER 1
FT NON_TER 76
SQ SEQUENCE 76 AA; 8796 MW; 7D984E2F97453B20 CRC64;

Query Match 41.3%; Score 342; DB 6; Length 76;
Best Local Similarity 100.0%; Pred. No. 7.6e-30;
Matches 65; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 57 DPHIKLOLAEEGRGVSIKVCANRYLAMKEDGRLLASKCVTDECFEFLERLESNNYR 116
DB 1 DPHIKLOLAEEGRGVSIKVCANRYLAMKEDGRLLASKCVTDECFEFLERLESNNYR 60

QY 117 SRKYS 121
DB 61 SRKYS 65

RESULT 14
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```
000527
ID 000527 PRELIMINARY; PRT; 114 AA.
AC 000527;
DT 01-JAN-1998 (TREMblrel. 05, Created)
DT 01-JAN-1999 (TREMblrel. 09, Last sequence update)
DT 01-JUN-2001 (TREMblrel. 17, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
GN FGF-2 OR FGF2.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominiidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=BLOOD;
RA Handschug K., Archoukieh E., Glaeser C.;
RT "Mutations in the 5' untranslated region of the FGF-2 gene: transition
RT G to A on position 19 and transversion G to C on position 97."
RL Submitted (NOV-1999) to the EMBL/GenBank/DBJ databases.
DR EMBL: Y13468; CAAT3868.1; -.
DR EMBL: AJ250952; CAB61690.1; -.
DR HSSP: P09038; IBFF.
DR InterPro: IPR002209; HBGF_FGF.
DR Pfam: PF00167; FGF_1.
DR ProDom: PD000831; HBGF_FGF_1.
FT NON_TER 114
FT NON_TER 114
SQ SEQUENCE 114 AA; 11688 MW; 98DC6381C1960CID CRC64;

Query Match 39.6%; Score 328; DB 4; Length 114;
Best Local Similarity 100.0%; Pred. No. 4.3e-28;
Matches 59; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSITLPLALPEDGSGAPPGHFKDPKRLYCKNGGFLRHPDGVYREKSDPH 59
DB 56 MAAGSITLPLALPEDGSGAPPGHFKDPKRLYCKNGGFLRHPDGVYREKSDPH 114

RESULT 15
ID 016443 PRELIMINARY; PRT; 114 AA.
AC 016443;
DT 01-NOV-1996 (TREMblrel. 01, Created)
DT 01-NOV-1996 (TREMblrel. 01, Last sequence update)
DT 01-JUN-2001 (TREMblrel. 17, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Hominiidae; Homo.
OX NCBI_TaxID=9606;
RN [1]
RP SEQUENCE FROM N.A.
RC MEDLINE=92152654; PubMed=1785797;
RA Florkiewicz R.Z., Shiba F., Barankiewicz T., Baird A.,
RA Gonzalez A.M., Florkiewicz E., Shah N.;
RT "Basic fibroblast growth factor gene expression."
RL Ann. N. Y. Acad. Sci. 638:109-126(1991).
DR EMBL: S81809; AAB21432.2; -.
DR HSSP: P09038; IBFF.
DR InterPro: IPR002209; HBGF_FGF.
DR Pfam: PF00167; FGF_1.
DR ProDom: PD000831; HBGF_FGF_1.
FT NON_TER 1
FT NON_TER 114
SQ SEQUENCE 114 AA; 11670 MW; 88DCA49C774D61AA CRC64;
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Query Match 39.6%; Score 328; DB 4; Length 114;
Best Local Similarity 100.0%; Pred. No. 4,3e-28;
Matches 59; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGGGAPFPGHFKDPKRLCYCKNGGFLLRIHPDGRVDGVREKSDPH 59
|||||
Db 56 MAAGSITTLPALPEDGGGAPFPGHFKDPKRLCYCKNGGFLLRIHPDGRVDGVREKSDPH 114
|||||

Search completed: June 7, 2002, 14:46:13
Job time: 629 sec

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:35:40 ; Search time 93.91 Seconds

(without alignments)
183.329 Million cell updates/sec

Title: US-09-802-365-8

Perfect score: 826
Sequence: 1 MAAGSITPLPALPEDGSGA.....GSKTGPQKAILFLPMASAKS 155

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 747574 seqs, 111073796 residues

Total number of hits satisfying chosen parameters: 747574

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%

Listing first 45 summaries

Database :

A-Geneseq_032802:*

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- 2: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1981.DAT:*
- 3: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1982.DAT:*
- 4: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1983.DAT:*
- 5: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1984.DAT:*
- 6: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1985.DAT:*
- 7: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1986.DAT:*
- 8: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1987.DAT:*
- 9: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1988.DAT:*
- 10: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1989.DAT:*
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- 13: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1992.DAT:*
- 14: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1993.DAT:*
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- 18: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1997.DAT:*
- 19: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1998.DAT:*
- 20: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA1999.DAT:*
- 21: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA2000.DAT:*
- 22: /SIDSL/gcgdata/hold-geneseq/geneseqp-emb1/AA2001.DAT:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	826	100.0	155	8 AAP70301	Sequence of human
2	826	100.0	155	10 AAP4038	Human basic fibrob
3	826	100.0	155	11 AAR05314	Human basic fibrob
4	826	100.0	155	13 AAR2232	bFGF truncated at
5	826	100.0	155	14 AAR40159	Human bFGF peptide
6	826	100.0	155	16 AAR80777	Fibroblast growth
7	826	100.0	155	16 AAR70204	Human bFGF. Homo
8	826	100.0	155	16 AAR70204	FGF-2. Homo sapie
9	826	100.0	155	18 AAW3338	Human fibronectin
10	826	100.0	155	18 AAW19595	Biologically activ
11	826	100.0	155	19 AAT05456	Fibronectin recept

12	826	100.0	155	19 AAW75712	Fibroblast growth
13	826	100.0	155	19 AAW71379	18 kDa form of fib
14	826	100.0	155	19 AAW53023	Fibroblast growth
15	826	100.0	155	20 AAW93380	18 kD isoform of h
16	826	100.0	155	21 AAB10298	Fibroblast growth
17	826	100.0	155	21 AAY66873	Human fibroblast g
18	826	100.0	155	21 AAY66893	Human fibroblast g
19	826	100.0	155	21 AAY90411	Human fibroblast g
20	826	100.0	155	21 AAY90448	Human FGF-2 (bFGF)
21	826	100.0	155	21 AAY32334	Human FGF-2 (bFGF)
22	826	100.0	155	22 AAG65648	Human fibroblast g
23	826	100.0	155	22 AAE11976	Human fibroblast g
24	826	100.0	155	22 AAB85813	Human fibroblast g
25	826	100.0	155	22 AAB89918	Human FGF-2 protei
26	826	100.0	155	22 AAG64317	Human FGF-2 protei
27	826	100.0	155	22 AAG64847	Heart muscle cell
28	826	100.0	155	22 AAB84597	Amino acid sequenc
29	826	100.0	155	22 AAY72909	Truncated form of
30	826	100.0	155	22 AAB61662	FGF2 protein. Hom
31	826	100.0	155	22 AAB50274	Human basic fibrob
32	826	100.0	157	8 AAP71085	Sequence of human
33	826	100.0	158	18 AAW31664	Leaderless protein
34	826	100.0	158	22 AAO08594	Human basic fibrob
35	826	100.0	158	22 AAG78316	Human basic fibrob
36	826	100.0	158	22 AAU04006	Human basic fibrob
37	826	100.0	165	11 AAR05787	Human bFGF encoded
38	826	100.0	210	11 AAR06685	Recombinant basic
39	826	100.0	210	22 AAB60695	Human basic fibrob
40	826	100.0	210	22 AAB50299	Human basic fibrob
41	826	100.0	210	22 AAB50706	Human fibroblast g
42	826	100.0	211	11 AAR07076	Human fibroblast g
43	826	100.0	410	15 AAR43957	Extended recombin
44	826	100.0	410	15 AAR43958	Saporin/FGF fusion
45	826	100.0	410	16 AAR91067	bFGF/saporin fusio

ALIGNMENTS

RESULT	1
AAAP70301	
ID	AAAP70301 standard; Protein; 155 AA.
XX	
AC	AAAP70301;
XX	
DP	05-JUN-1991 (first entry)
XX	
DE	Sequence of human basic fibroblast growth factor (bFGF).
XX	
KW	Fibroblast growth promoter; mesoderm cell growth promoter;
KM	wound healing.
XX	
OS	Homo sapiens.
XX	
FH	Key
FT	Peptide
FT	Protein
XX	
EP	EP237966-A.
XX	
PD	23-SEP-1987.
XX	
PE	12-MAR-1987; 87EP-0103601.
XX	
PR	29-SEP-1986; 86JP-0231428.
PR	14-MAR-1986; 86JP-0037919.
PR	09-APR-1986; 86JP-0082699.
PR	09-OCT-1986; 86JP-0241053.
XX	
PA	(TAKE) TAKEIDA CHEMICAL IND KK.
XX	
PI	Kurokawa T, Sasada R, Iwane M, Igarashi K;

Location/Qualifiers
1..9
10..155
/note="claimed"

```

XX      WPI; 1987-265363/38.
DR      N-PSDB; AAN70494.
XX
PT      Human basic fibroblast growth factor - produced by recombinant
PT      DNA techniques, useful for healing wounds, prophylaxis,
PT      thrombosis and arteriosclerosis treatment, etc.
XX
PS      Disclosure; Fig 1; 38pp; English.
XX
CC      hbFGF is produced using cDNA prep. from RNA isolated from M138 or
CC      IMR90 human fibroblasts. hbFGF promotes growth of fibroblasts and
CC      other mesoderm-derived cells and is useful for promoting healing of
CC      wounds (eg burns), for prophylaxis and treatment of thrombosis and
CC      arteriosclerosis, and as a promoter for cell culture.
XX
SQ      Sequence 155 AA;

Query Match          100.0%; Score 826; DB 8; Length 155;
Best Local Similarity 100.0%; Pred. No. 2.9e-80;
Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1  MAASITTLPALPDDGSGAPPGHFKDPKRLYCKNGGFRLRHPDGRVDSVREKSDPHI 60
        |||||||
        1  maagsittlpalpddgsgaifpghfkdpkrlcycknggfifrlhpdgrvdsvreksdphl 60
DB
QY      61  KLOQAEEERGVSITKGCANRYLAMKEDGRLASKCVTDECFEERLESNNYNTYRSRKY 120
        |||||||
        61  klqqaeeergvsvtkgcanylamkedgrllaskcvtdcefferlesnnyntyrsky 120
DB
QY      121 TSWYVALKRTGQYKLGSKTGPGRKAILFLPMsAKS 155
        |||||||
        121 tswyvalkrtgqyklgsktgpgrkailflpmsaks 155
DB

RESULT 2
AAP94038
ID      AAP94038 standard; protein; 155 AA.
XX
AC      AAP94038;
XX
DT      25-JUN-1990 (first entry)
XX
DE      Human basic fibroblast growth factor.
XX
KM      Basic fibroblast growth factor; pUC9-TSP1; pUC9delH3-PTSF-3.
XX
OS      Homo sapiens.
XX
FH      Key Location/Qualifiers
FT      Misc-difference 78 /label-Cys
FT      /note="replaced by Ser or Ala"
FT      Misc-difference 96 /label-Cys
FT      /note="replaced by Ser or Ala"
FT      Misc-difference 128 /note="replaced by Ser or Ala"
FT      /label-Lys
FT      /note="replaced by Ser or Glu"
FT      Misc-difference 129 /label-Arg
FT      /label-Arg
FT      /note="replaced by Thr"
FT      Misc-difference 138 /label-Lys
FT      /label-Lys
FT      /note="replaced by Ser"
FT      Domain 128..138 /label=heparin-binding domain
XX
XX      EP298723-A.
XX
XX      11-JAN-1989.
XX

```

```

PF      06-JUL-1988; 88EP-0306158.
XX
XX      07-JUL-1987; 87US-0070797.
XX
PA      (BIOT-) BIOTECHN RES ASSOC.
XX
PI      Fildes JC, Abraham JA, Procter A;
XX
DR      WPI; 1989-009785/02.
DR      N-PSDB; AAN93087.
XX
PT      Recombinant DNA encoding new fibroblast growth factor
PT      analogues - useful eg for accelerating wound healing and
PT      to control neovascularisation.
XX
PS      Disclosure; d 1-2; 44pp; English.
XX
CC      DNA encoding the sequence may be mutated to encode an analogue, of human
CC      basic fibroblast growth factor (bFGF) bFGF-C78/96S, which has reduced
CC      affinity for heparin. One or more positively-charged AAs in the heparin-
CC      binding domain (AAs 128-138) are replaced by neutral or negatively-
CC      charged residues as indicated in the feature table. A recombinant vector
CC      (pUC9-TSP1 or pUC9delH3-PTSF-3) contg. the mutated DNA can be used to
CC      transform bacterial or mammalian host cells for prodn. of the analogue.
XX
SQ      Sequence 155 AA;

Query Match          100.0%; Score 826; DB 10; Length 155;
Best Local Similarity 100.0%; Pred. No. 2.9e-80;
Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY      1  MAASITTLPALPDDGSGAPPGHFKDPKRLYCKNGGFRLRHPDGRVDSVREKSDPHI 60
        |||||||
        1  maagsittlpalpddgsgaifpghfkdpkrlcycknggfifrlhpdgrvdsvreksdphl 60
DB
QY      61  KLOQAEEERGVSITKGCANRYLAMKEDGRLASKCVTDECFEERLESNNYNTYRSRKY 120
        |||||||
        61  klqqaeeergvsvtkgcanylamkedgrllaskcvtdcefferlesnnyntyrsky 120
DB
QY      121 TSWYVALKRTGQYKLGSKTGPGRKAILFLPMsAKS 155
        |||||||
        121 tswyvalkrtgqyklgsktgpgrkailflpmsaks 155
DB

RESULT 3
AAR05314
ID      AAR05314 standard; protein; 155 AA.
XX
AC      AAR05314;
XX
DT      10-OCT-1990 (first entry)
XX
DE      Human basic fibroblast growth factor (bFGF).
XX
KM      Fibroblast growth factor; FGF; yeast; ischaemia; ds.
XX
OS      Synthetic.
XX
XX      WO9005184-A.
XX
XX      17-MAY-1990.
XX
XX      03-NOV-1989; 89WO-0004821.
XX
XX      04-NOV-1988; 88US-0267408.
XX
XX      (CHIR-) CHIRON CORP.
XX
XX      Barr PJ;
XX
XX      WPI; 1990-178825/23.
XX

```

DR N-PSDB; AAQ04716.
 XX
 PT Yeast prodn. of human basic and acidic fibroblast growth factor -
 PT with acetylated amino-terminal, useful eg. for treating cell
 PT senescence, neuronal regression and cell death.
 XX
 PS Disclosure; : p; English.
 CC FGF have applications such as in vivo nerve regeneration, wound
 CC repair ischemia and corneal repair. They may also have therapeutic
 CC uses in the CNS and PNS in treatment of cell death and neuronal
 CC regression.
 XX
 SQ Sequence 155 AA;
 Query Match 100.0%; Score 826; DB 11; Length 155;
 Best Local Similarity 100.0%; Pred. No. 2.9e-80;
 Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 MAAGSITTLPALPEDGSGARPPGHFKDPKRLCYCKNGGFFLRHPDGRVDSVREKSDPHI 60
 |||||||
 Db 1 maagsittlpalpedgsgaifppghfkdpkrlcycknggfflrhpdgrvdsvreksdphl 60
 |||||||
 QY 61 KLQQAEEERGVSISIKVCANRYLAMKEDGRLASKCVTDECFEERLESNNYNTYRSRKY 120
 |||||||
 Db 61 klqqaeeergvsiskvcanrylamkedgrllaaskcvdecffierlesnnyntyrsky 120
 |||||||
 QY 121 TSWYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
 |||||||
 Db 121 tswyvalkrtgqyklgsktgpqkailflpmsaks 155
 |||||||

RESULT 4

AAAR22232
 ID AAR22232 standard; protein: 155 AA.
 XX
 AC AAR22232;
 XX
 DT 23-JUN-1992 (first entry)
 XX
 DE bFGF truncated at its N-terminus.
 XX
 KM Basic fibroblast growth factor; adduct; heparin; heparan sulphate;
 KM pepsin A; cathepsin D; wounds; burns.
 XX
 OS Synthetic.
 OS
 PN WO9202539-A.
 XX
 PD 20-FEB-1992.
 XX
 PE 30-JUL-1991; 91WO-EP01428.
 XX
 PR 02-AUG-1990; 90GB-0017008.
 XX
 PA (FARM) FARMITALIA C ERBA SRL.
 XX
 PI Monsan P, Paul F, Betbeder D, Sarmientos P;
 XX
 DR WPI; 1992-080021/10.
 XX
 PT Prepn. of basic fibroblast growth factor - by forming adduct with
 PT heparin or heparan sulphate and cleaning with pepsin A or
 PT cathepsin D
 XX
 PS Claim 4; Page 27; 36pp; English.
 XX
 CC The peptide sequence was deduced from the synthetic DNA sequence
 CC prep'd as described in EP-363675. E. coli cells transformed with the
 CC synthetic DNA were lysed and the supernatant purified, giving a
 CC 50:50 mixture of a 154 residue bFGF (2-155) having the amino acid
 CC sequence of the 155 residue form (Abraham et al., Science, 233, 545-

CC 548, 1986) shown here but without the N-terminal Met; and a 153
 CC residue bFGF (3-155). An adduct of bFGF formed with heparin or
 CC heparan sulphate contg. the bFGF 9-10 leu-pro bond can be cleaved
 CC with pepsin A or cathepsin D to cleave this bond and release a
 CC peptide with the N-terminus be deleted up to and including residue
 CC 9, sequentially. This cleavage method can be used to obtain a pure
 CC form of the 146 amino acid bFGF (10-155) bFGF. The prod. can be used
 CC to treat wounds and burns.
 CC See also AAR22233.
 XX
 SQ Sequence 155 AA;
 Query Match 100.0%; Score 826; DB 13; Length 155;
 Best Local Similarity 100.0%; Pred. No. 2.9e-80;
 Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGSGARPPGHFKDPKRLCYCKNGGFFLRHPDGRVDSVREKSDPHI 60
 |||||||
 Db 1 maagsittlpalpedgsgaifppghfkdpkrlcycknggfflrhpdgrvdsvreksdphl 60
 |||||||
 QY 61 KLQQAEEERGVSISIKVCANRYLAMKEDGRLASKCVTDECFEERLESNNYNTYRSRKY 120
 |||||||
 Db 61 klqqaeeergvsiskvcanrylamkedgrllaaskcvdecffierlesnnyntyrsky 120
 |||||||
 QY 121 TSWYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
 |||||||
 Db 121 tswyvalkrtgqyklgsktgpqkailflpmsaks 155
 |||||||

RESULT 5

AAAR40159
 ID AAR40159 standard; peptide: 155 AA.
 XX
 AC AAR40159;
 XX
 DT 07-FEB-1994 (first entry)
 XX
 DE Human bFGF peptide fragment #1.
 XX
 KM Human; fibronectin; FN; fibroblast cell growth factor; FGF;
 KM fusion; cell adhesion; cell growth; anti-aging; cosmetics;
 KM wound healing; surgery.
 XX
 OS Homo sapiens.
 OS
 PN JP05178897-A.
 XX
 PD 20-JUL-1993.
 XX
 PE 05-MAR-1992; 92JP-0083220.
 XX
 PR 14-OCT-1991; 91JP-0291959.
 XX
 PA (TAKI) TAKARA SHUZO CO LTD.
 XX
 DR WPI; 1993-261656/33.
 XX
 DR N-PSDB; AAQ46943.
 XX
 PT Synthetic functional polypeptide to promote wound healing, etc. -
 PT contg. cell adhesion polypeptide from fibronectin and fibroblast
 PT growth factor polypeptide, opt. linked by spacer
 XX
 PS Disclosure; Page 7; 13pp; Japanese.
 XX
 CC The sequences given in AAR40158-63 represent human fibronectin (FN)
 CC and fibroblast cell growth factor (FGF) fragments which were used in
 CC the production of fusion polypeptides which are able to stimulate
 CC cell adhesion and cell growth. These fusion peptides may be used
 CC for anti-aging cosmetics and in wound healing after surgery.
 XX
 SQ Sequence 155 AA;

Db 1 maagsitlclpalpedggsaifppghfkdpkrllycknggffllihpdyrvdyvrekspdh 60
QY 61 KILOAEEERGVSIVKGVCANRYLAMKEDGRLASKCVTDECFEPERLESNNNTYRSRY 120
Db 61 klglaeergvsvikgvcanrylamkedgrllaskcvtdceffierlesnnytyrsky 120
QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
Db 121 tsmyvalkrtggyklygsktgpqkailflpmsaks 155

RESULT 8

AAW0823
ID AAW0823 standard; protein; 155 AA.

AC AAW0823;

DT 01-SEP-1995 (first entry)

DE FGF-2.

KW FGF-2; fibroblast growth factor; cytotoxic conjugate; fusion protein; saporin; cytosstatic; tumor; diabetes; rheumatoid arthritis.

OS Homo sapiens.

PN W0503831-A.

PD 09-FEB-1995.

PF 27-JUL-1994; 94WO-US08511.

PR 02-AUG-1993; 93US-0099924.

PR 29-OCT-1993; 93US-0145829.

PA (PRIZ-) PRIZM PHARM INC.

PA (WHT-) WHITTIER INST DIABETES & ENDOCRINOLOGY.

PI Baird AJ, Lappl DA, Sosnowski BA;

DR WPI; 1995-082038/11.

XX New monogenous preparations of cytotoxic conjugates and DNA -
PT contain fibroblast growth factors and cytotoxic agents for
PT treating FGF conditions such as tumours, diabetes and rheumatoid
PT arthritis.

PS Disclosure: Page 109-110; 128pp; English.

CC Novel fusion proteins comprise FGF linked to saporin. FGF-1 to -9

CC may be used, pref. mutains in which at least 1 Cys residue is
CC replaced by conservative Ser substitutions. The fusion proteins
CC are potent cytotoxic agents to cells bearing the FGF receptor.

XX Sequence 155 AA;

Query Match 100.0%; Score 826; DB 16; length 155;
Best Local Similarity 100.0%; Pred. No. 2.9e-80;
Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGGSAPPPGHFKDPKRLYCKNGGFFLRIHPDGRVDGYREKSDPHI 60

Db 1 maagsitlclpalpedggsaifppghfkdpkrllycknggffllihpdyrvdyvrekspdh 60

QY 61 KILOAEEERGVSIVKGVCANRYLAMKEDGRLASKCVTDECFEPERLESNNNTYRSRY 120

Db 61 klglaeergvsvikgvcanrylamkedgrllaskcvtdceffierlesnnytyrsky 120

QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155

Db 121 tsmyvalkrtggyklygsktgpqkailflpmsaks 155

RESULT 9

AAW33338
ID AAW33338 standard; protein; 155 AA.

AC AAW33338;

DT 23-FEB-1998 (first entry)

DE Human fibronectin amino-terminal oligopeptide.

KW Amino-terminal; human fibronectin; target cell;
KW transfection; retroviral vector; gene therapy; cancer;
KW viral disease; acquired immunodeficiency syndrome; AIDS.

OS Homo sapiens.

PN W09718318-A1.

PD 22-MAY-1997.

PF 07-NOV-1996; 96WO-JP03254.

PR 08-MAR-1996; 96JP-0051847.

PR 13-NOV-1995; 95JP-0294382.

PA (TAKI) TAKARA SHUZO CO LTD.

PI Asada K, Hashino K, Kato I, Koyama N, Uemori T;

PI Ueno T;

DR WPI; 1997-289294/26.

PT Method for increasing efficacy of gene transfer to target cell using
PT retrovirus - By infection of the target cell in the presence of a
PT substance which binds to the virus and a substance which binds to
PT the target cell

PS Claim 41; Pages 93-94; 194pp; Japanese.

XX The present sequence is a human fibronectin amino-terminal
CC oligopeptide, which was used in the development of a novel method
CC for increasing the efficiency of gene introduction into a target
CC cell using a retroviral vector. The method comprises carrying out
CC viral infection of the target cell in the presence of a retrovirus
CC and target cell binding substance or substances. The method can be
CC used to effectively introduce genes into target cells for the gene
CC therapy of cancer and viral diseases, e.g. AIDS.

XX Sequence 155 AA;

Query Match 100.0%; Score 826; DB 18; length 155;
Best Local Similarity 100.0%; Pred. No. 2.9e-80;
Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGGSAPPPGHFKDPKRLYCKNGGFFLRIHPDGRVDGYREKSDPHI 60

Db 1 maagsitlclpalpedggsaifppghfkdpkrllycknggffllihpdyrvdyvrekspdh 60

QY 61 KILOAEEERGVSIVKGVCANRYLAMKEDGRLASKCVTDECFEPERLESNNNTYRSRY 120

Db 61 klglaeergvsvikgvcanrylamkedgrllaskcvtdceffierlesnnytyrsky 120

QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155

Db 121 tsmyvalkrtggyklygsktgpqkailflpmsaks 155

RESULT 10

AAW19595
ID AAW19595 standard; protein; 155 AA.

XX

```
AC AAW19595;
XX
XX 18-SEP-1997 (first entry)
XX
XX Biologically active recombinant basic fibroblast growth factor.
DE
XX FGF: fibroblast growth factor; basic; acidic; wound healing;
KM neurodegenerative disease; Parkinson's; Alzheimer's disease;
XX bone fracture; biologically active; embolism.
XX
XX Homo sapiens.
OS
XX
XX Key Location/Qualifiers
FH Peptide 1..9
FT /label= sig_peptide
FT 10..155
FT Protein /label= mat_protein
XX
XX US5604293-A.
XX
XX 18-FEB-1997.
XX
XX 12-SEP-1985; 85US-0775521.
XX
XX 15-MAY-1987; 87US-0050706.
XX
XX 12-SEP-1985; 85US-0775521.
XX
XX 16-DEC-1985; 85US-0809163.
XX
XX 30-MAY-1986; 86US-0869382.
XX
XX 30-MAR-1992; 92US-0860688.
XX
XX 01-APR-1994; 94US-0221462.
XX
XX (SCIO-) SCIOS INC.
XX
XX Abraham JA, Fiddes JC;
XX
XX WPI. 1997-234676/21.
XX
XX N-PSDB; AAT71231.
XX
XX New high purity, recombinant human basic fibroblast growth factor -
XX for promoting wound healing and treating neurodegenerative
XX diseases, suitable for production on large scale
XX
XX Claim 2; Fig 4; 34pp; English.
XX
XX AAW19595 is a biologically active recombinant human basic fibroblast
XX growth factor (bFGF). The protein is free from all infectious
XX impurities, substances that normally accompany it and from
XX post-translational modification of Cys residues of native human bFGF.
XX Recombinant bFGF is used to promote healing of wounds, bone fractures,
XX damaged myocardial tissue etc. and, since it increases neuronal survival
XX and promotes neurite outgrowth, may also be used in treatment of
XX neurological disorders such as Alzheimer's and Parkinson's diseases. bFGF
XX may also be used for detection of specific inhibitors; for treatment of
XX cell cultures in vitro before transplant and for inducing release of
XX tissue plasminogen activator or collagenase, e.g. for treatment of a
XX chronic tendency to form embolism. Recombinant bFGF can be produced on a
XX large scale.
XX
XX Sequence 155 AA:
SQ
Query Match 100.0%; Score 826; DB 18; Length 155;
Best Local Similarity 100.0%; Pred. No. 2.9e-80;
Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```
OY 1 MAAGSTTTLPALPEDGSGAPPFGHFKDPKRLYCKNGGFLLRIHPDGRVDGYREKSDPHI 60
XX |||||||
XX 1 maagstltlpalpedgsgafppghfkdpkrllycknggffllrhpdgrydvreksdphl 60
DB
OY 61 KIQLAEEERGVSIVKVCANRYLAMKEDGRLASKCVTDECFEERLESNNYNTYRSRY 120
XX |||||||
XX 61 kqlaageergvsvikvcanrylamkedgrllaskcvtdceffferlesnnyntyrsry 120
DB 61 kqlaageergvsvikvcanrylamkedgrllaskcvtdceffferlesnnyntyrsry 120
```

```
OY 121 TSMYVALKRRGTQYKLGSKTGPQOKAILFLPMSAKS 155
XX |||||||
XX Db 121 tswyvalkrtgqyklgsktgpqokailflpmsaks 155
XX
XX RESULT 11
XX AAY05456 standard; protein; 155 AA.
XX
XX AAY05456;
XX
XX 07-JUL-1999 (first entry)
XX
XX Fibronectin receptor targeting HIV strain CH-271.
XX
XX Fibronectin receptor; HIV; infection; therapy.
XX
XX Unidentified.
XX
XX JP10029952-A.
XX
XX 03-FEB-1998.
XX
XX 16-JUL-1996; 96JP-0185893.
XX
XX 16-JUL-1996; 96JP-0185893.
XX
XX (TAKI ) TAKARA SHUZO CO LTD.
XX
XX WPI. 1998-163674/15.
XX
XX Control of human immunodeficiency virus infection - using
XX composition comprising replication defective HIV vector
XX
XX Disclosure; Page 17; 24pp; Japanese.
XX
XX This sequence represents a fibronectin receptor that can be used in
XX the method of the invention. The method is for the control of human
XX immunodeficiency virus (HIV) infection using a composition which
XX comprises a functional substance which participates in the infection of
XX HIV. The method is used to control HIV-infection.
XX
XX Sequence 155 AA:
SQ
Query Match 100.0%; Score 826; DB 19; Length 155;
Best Local Similarity 100.0%; Pred. No. 2.9e-80;
Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```

```
OY 1 MAAGSTTTLPALPEDGSGAPPFGHFKDPKRLYCKNGGFLLRIHPDGRVDGYREKSDPHI 60
XX |||||||
XX Db 1 maagstltlpalpedgsgafppghfkdpkrllycknggffllrhpdgrydvreksdphl 60
OY 61 KIQLAEEERGVSIVKVCANRYLAMKEDGRLASKCVTDECFEERLESNNYNTYRSRY 120
XX |||||||
XX Db 61 kqlaageergvsvikvcanrylamkedgrllaskcvtdceffferlesnnyntyrsry 120
OY 121 TSMYVALKRRGTQYKLGSKTGPQOKAILFLPMSAKS 155
XX |||||||
XX Db 121 tswyvalkrtgqyklgsktgpqokailflpmsaks 155
XX
XX RESULT 12
XX AAW75712 standard; protein; 155 AA.
XX
XX AAW75712;
XX
XX 07-DEC-1998 (first entry)
XX
XX Fibroblast growth factor-2.
XX
XX Fibroblast growth factor-2; FGF-2; basic fibroblast growth factor;
```


KM bFGF; mutelin; protein engineering; heparin; thrombosis;
 KW thrombocytopenia; ophthalmic disorder; human; therapy.

OS Homo sapiens.

PH Key Location/Qualifiers
 FT Peptide 1..9 /label= Sig_peptide

FT Protein /note= "amino acid residues -9 to -1"
 FT 10..155 /label= Mat_protein

FT Misc-difference 95 /note= "amino acid residues +1 to +145"

FT "Phe-95 is replaced by another amino acid
 FT acid (Claim 3), preferably Ala, Phe, Ser,
 FT Gly, Met, Leu or Tyr, especially Ala, Gly
 FT or Ser"

FT Misc-difference 96 /note= "Glu-96 may be replaced by another amino
 FT acid (Claim 7), preferably Ala, Gly or Ser"

FT Misc-difference 101 /note= "Asn-101 may be replaced by another amino
 FT acid (Claim 2), preferably Ala, Phe, Ser,
 FT Gly, Met, Leu or Tyr, especially Ala, Gly
 FT or Ser"

FT Misc-difference 104 /note= "Asn-104 may be replaced by another amino
 FT acid (Claim 1), preferably Ala, Phe, Ser,
 FT Gly, Met, Leu or Tyr, especially Ala, Gly
 FT or Ser"

PN WO9839436-A2.

PD 11-SEP-1998.

PP 03-MAR-1998; 98WO-JP00878.

PR 03-MAR-1997; 97US-0040785.

PA (EISA) EISAI CO LTD.

PI Kalyanaraman R, Kawai T, Zhu H;

DR WPI; 1998-495843/42.

DR N-PSDB; AAV47647.

PT Fibroblast growth factor mutelin and DNA - having reduced receptor
 PT binding and able to bind heparin, useful for treating and regulating
 PT heparin-related disorders e.g. thrombosis

PS Disclosure; Page 53; 71pp; English.

XX This is the amino acid sequence of fibroblast growth factor-2
 CC (FGF-2), or basic fibroblast growth factor (bFGF). Claimed DNA
 CC molecules of the invention encode FGF mutelin polypeptides (see
 CC AAW5711-20) that show reduced FGF receptor binding activity but
 CC which retain the ability to bind heparin. For FGF-2, amino acid
 CC residues 95, 101 or 104 are preferably replaced by other amino acid
 CC residues, with an optional further replacement of the Glu-96
 CC residue. The mutelin may be further modified by replacement of the
 CC Cys-78 and Cys-96 residues to reduce aggregation. The mutelin
 CC is obtained by site-specific or site-directed mutagenesis of FGF-2
 CC DNA, incorporation of the mutated DNA into a vector and expression
 CC in host cells. The FGF muteins are used to treat heparin-related
 CC disorders, such as excessive bleeding induced by heparin,
 CC ophthalmic disorders and heparin-associated thrombocytopenia and
 CC thrombosis. They may also be used for drug design, especially
 CC FGF-2 antagonists.

SO Sequence 155 AA;

Query Match

100.0%; Score 826; DB 19; Length 155;

Best Local Similarity 100.0%; Pred. No. 2.9e-80;
 Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSTTTLPAIPEDGSGAPPGHFKDKPKRLCYKNGSGFELRHPPGRVDGVRKSDPHI 60

Db 1 maagslttlpalpedgsgsaippghfkdkpkrlcykngsfflrlhpgvrdgvrksdphl 60

QY 61 KIQQLAEEERGVSIRKVCANRYLAMKEDGRLLASKVCTECEFFERLESNNYRSRRY 120

Db 61 kqlqgeergvvsirkvcanrylamkedgrllaskvcdecffferlesnnyrstrky 120

QY 121 TSWYVALKRTGQYRKSGTKGPGOKAILFLPMGAKS 155

Db 121 tswyvalkrtgqyklsgtkpgokailflpmsaks 155

RESULT 13

AAW71379

AC AAW71379;

DT 04-DEC-1998 (first entry)

DE 18 kDa form of fibroblast growth factor-2 (FGF-2).

KW Fibroblast growth factor-2; FGF-2; leaderless protein; inhibition;
 KW export; angiogenesis; restenosis; treatment; tumour; inflammation;
 KW cell proliferation; diabetes; retinopathy; infection;
 KW polycystic kidney disease; atherosclerosis.

OS Homo sapiens.

PN WO9837880-A1.

PD 03-SEP-1998.

PP 25-FEB-1998; 98WO-US03689.

PR 26-FEB-1997; 97US-0807014.

PA (CIBL-) CIBLEX CORP.

PI Baird A, Florjancicz R;

DR WPI; 1998-495377/42.

DR N-PSDB; AAV60340.

PT Inhibiting export of leaderless protein with agent that inhibits
 PT binding to transporter protein - especially for treating
 PT angiogenesis and restenosis by preventing export of fibroblast
 PT growth factor, also methods for identifying leaderless proteins and
 PT their transporters

PS Claim 2; Pages 55-56; 116pp; English.

XX The present sequence represents 18 kDa form of fibroblast growth factor-2
 CC (FGF-2), a leaderless protein. A leaderless protein refers to a protein
 CC that is found in an extracellular environment, but lacks a canonical
 CC leader sequence. The specification describes a method for inhibiting
 CC export of a leaderless protein from a cell. The method comprises treating
 CC the cell with an agent that inhibits binding between the leaderless
 CC protein and a transport molecule. Treatment with the inhibiting agent
 CC is specifically used to treat angiogenesis and restenosis, i.e. where
 CC expression of FGF-2 is inhibited, and the agent is applied to endothelial
 CC or smooth muscle cells. Other applications are treatment of tumours
 CC (melanoma, teratocarcinoma, ovarian carcinoma, bladder cancer and
 CC neuroblastoma), inflammation, cell proliferation, complications of
 CC diabetes (e.g. retinopathy), viral, bacterial or fungal infections,
 CC polycystic kidney disease and atherosclerosis.

SO Sequence 155 AA;

Query Match 100.0%; Score 826; DB 19; Length 155;
 Best Local Similarity 100.0%; Pred. No. 2.9e-80;
 Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSTITLPALEPDGSGAFPFGHFKDKPKRLYCKNGGFLLRHDPGRVDGYREKSDPHI 60
 |||
 DB 1 maagsitlpaipedgsgafppghfkdkpkrlycknggffllrhdpgrvdgyvrekspdh 60
 |||
 QY 61 KIQLQAEERGVSIGVCANRYLAMKEEDGRLLASKCVDCEFFERLESNNYNTYRSRKY 120
 |||
 DB 61 KIQLQAEERGVSIGVCANRYLAMKEEDGRLLASKCVDCEFFERLESNNYNTYRSKY 120
 |||
 QY 121 TSMYVALKRTGQYKLGSKTGPCOKAILFLPMSAKS 155
 |||
 DB 121 tsmyvalkrtgqyklgsktgpqkailflpmsaks 155
 |||

RESULT 14

AAM53023
 ID AAM53023 standard; Protein; 155 AA.

AC AAM53023;

DE 14-AUG-1998 (first entry)

DE Fibroblast growth factor protein 2.

XX FGF, cell growth; survival; differentiation; central nervous system;
 KM peripheral nervous tissue; treatment; diagnosis; cell culture.

OS Mammalian.

PN WO9808864-A1.

PD 05-MAR-1998.

PF 27-AUG-1997; 97WO-US15237.

PR 30-AUG-1996; 96US-0705245.

XX (UYJO) UNTIV JOHNS HOPKINS SCHOOL MEDICINE.

PI Nathans J, Smallwood PM;

DR WPI; 1998-179380/16.

XX New fibroblast growth factor homologous factors - useful for, e.g.
 PT developing products for diagnosis and treatment of conditions
 PT involving neuro-degenerative and neoplastic disorders

XX Disclosure; Page 51-52; 94pp; English.

CC Fibroblast growth factor (FGF) proteins (AAM53022-W53024 and
 CC AAM53023-W53033) are members of the fibroblast growth factor family and
 CC have homology to fibroblast growth factor homologous factor (FGF)
 CC proteins. The FGF proteins (FGF 1-4) are involved in regulating the
 CC growth, survival, and differentiation of cells in the central nervous
 CC system, as well as cells in peripheral nervous tissues. The proteins can
 CC therefore be used for treating and diagnosing conditions involving the
 CC nervous system. FGF's can also be used in methods for maintaining the
 CC cultured cells or tissues or to promote neuron growth in vitro.

XX Sequence 155 AA;

Query Match 100.0%; Score 826; DB 19; Length 155;
 Best Local Similarity 100.0%; Pred. No. 2.9e-80;
 Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSTITLPALEPDGSGAFPFGHFKDKPKRLYCKNGGFLLRHDPGRVDGYREKSDPHI 60
 |||
 DB 1 maagsitlpaipedgsgafppghfkdkpkrlycknggffllrhdpgrvdgyvrekspdh 60
 |||

QY 61 KIQLQAEERGVSIGVCANRYLAMKEEDGRLLASKCVDCEFFERLESNNYNTYRSRKY 120
 |||
 DB 61 KIQLQAEERGVSIGVCANRYLAMKEEDGRLLASKCVDCEFFERLESNNYNTYRSKY 120
 |||

QY 121 TSMYVALKRTGQYKLGSKTGPCOKAILFLPMSAKS 155
 |||
 DB 121 tsmyvalkrtgqyklgsktgpqkailflpmsaks 155
 |||

RESULT 15

AAM9380
 ID AAM9380 standard; Protein; 155 AA.

AC AAM9380;

DE 21-MAY-1999 (first entry)

DE 18 kD isoform of human fibroblast growth factor 2.

XX Human; fibroblast growth factor; translational start site; isoform;
 KM inhibition; nuclear localisation; nuclear trafficking component;
 KM proliferation; inflammation; tumour growth; angiogenesis.

OS Homo sapiens.

PN WO9903489-A2.

PD 28-JAN-1999.

PF 20-JUL-1998; 98WO-US14997.

PR 21-JUL-1997; 97US-0897924.

XX (CIBL-) CIBLEX CORP.

PI Florikiewicz RZ;

DR WPI; 1999-131860/11.

XX N-PSDB; AAX25738.

PT Inhibiting nuclear localisation of proteins - used for controlling
 PT cellular functions, e.g. undesired proliferation and inflammation,
 PT particularly tumours, and treating viral infection

XX Disclosure; Page 42; 53pp; English.

CC This sequence represents the 18 kD isoform of the human fibroblast growth
 CC factor 2 (FGF2). The invention relates to inhibiting nuclear localisation
 CC of a nuclear protein in a cell, by administering an inhibitor of nuclear
 CC trafficking components. Interrupting the interaction of trafficking
 CC components and nuclear proteins may be used in a variety of applications,
 CC including inhibiting nuclear localisation, modulating protein trafficking
 CC of nuclear proteins such as FGF (in vitro or in vivo), identifying
 CC further trafficking components, and treating a variety of conditions
 CC associated with nuclear trafficking. The 24, 23 and 22 kD isoforms
 CC of FGF2 are nuclear proteins whereas the 18 kD isoform is not but is
 CC secreted. Inhibiting the nuclear transport of FGF-2 allows the control
 CC of undesired proliferation and inflammation, particularly tumour growth.
 CC Increasing export of FGF can promote angiogenesis. In addition, use of
 CC inhibitors of nuclear localisation can limit or eradicate viral (e.g. HIV
 CC or EBV) infections.

XX Sequence 155 AA;

Query Match 100.0%; Score 826; DB 20; Length 155;
 Best Local Similarity 100.0%; Pred. No. 2.9e-80;
 Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSTITLPALEPDGSGAFPFGHFKDKPKRLYCKNGGFLLRHDPGRVDGYREKSDPHI 60
 |||
 DB 1 maagsitlpaipedgsgafppghfkdkpkrlycknggffllrhdpgrvdgyvrekspdh 60
 |||

OY 61 KIQLQAERGCVSIGVCANRYLAMKEDGRILASKCVTDECFFERLESNNNTYRSRY 120
Db 61 KIQLQAERGCVSIGVCANRYLAMKEDGRILASKCVTDECFFERLESNNNTYRSRY 120
OY 121 TSWYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 155
Db 121 TSWYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 155

Search completed: June 7, 2002, 14:35:40
Job time: 277 sec

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:37:15 ; Search time 47.03 Seconds
(without alignments)
316.688 Million cell updates/sec

Title: US-09-802-365-8

Perfect score: 826
Sequence: 1 MAAGSITLPALEPDGSGA.....GSKTGPCKAILFLPMASKS 155

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283138 seqs, 96089334 residues

Total number of hits satisfying chosen parameters: 283138

Minimum DB seq length: 0
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%
Maximum Match 100%

Listing first 45 summaries

Database :
1: p1r1:*
2: p1r2:*
3: p1r3:*
4: p1r4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	826	100.0	210	A32398	basic fibroblast g
2	817	98.9	157	GKBOB	basic fibroblast g
3	798.5	96.7	154	A31674	basic fibroblast g
4	783.5	94.9	154	C37360	basic fibroblast g
5	770	93.2	146	S00185	basic fibroblast g
6	760.5	92.1	164	S31622	basic fibroblast g
7	759	91.9	189	A48834	basic fibroblast g
8	738	89.3	137	I46711	fibroblast growth
9	687	83.2	155	A40117	basic fibroblast g
10	468.5	56.7	125	A32484	basic fibroblast g
11	418.5	50.7	155	A60721	acidic fibroblast
12	410.5	49.7	155	A60130	acidic fibroblast
13	409.5	49.6	155	A33665	acidic fibroblast
14	404.5	49.0	155	S04147	acidic fibroblast
15	404.5	49.0	155	D37360	acidic fibroblast
16	403.5	48.8	152	JH0476	acidic fibroblast
17	393.5	47.9	155	JW0055	acidic fibroblast
18	393.5	47.6	155	GKBOA	acidic fibroblast
19	265	32.1	194	I50710	fibroblast growth
20	255.5	30.9	206	1 TVHUNS	fibroblast growth
21	253	30.6	256	JC4627	fibroblast growth
22	251	30.4	220	I50588	fibroblast growth
23	250	30.3	208	S14192	fibroblast growth
24	249	30.1	208	S20102	fibroblast growth
25	247.5	30.0	206	JC4268	fibroblast growth
26	242.5	29.4	264	A36207	fibroblast growth
27	242.5	29.4	266	S68144	fibroblast growth
28	241.5	29.2	202	1 TVMSHS	fibroblast growth
29	239	28.9	187	S23595	embryonic fibroblast

30	237.5	28.8	237	1	S39582	transforming prote
31	237	28.7	245	1	TVMST2	transforming prote
32	236	28.6	239	1	S04742	fibroblast growth
33	234.5	28.4	192	2	S54407	embryonic fibroblast
34	233	28.2	267	1	TVHUF5	fibroblast growth
35	217	26.3	208	2	S66486	fibroblast growth
36	217	26.3	208	2	A48137	fibroblast growth
37	210	25.4	211	2	JC7353	fibroblast growth
38	209.5	25.4	194	2	I48610	keratinocyte growth
39	208	25.2	208	2	JC7082	fibroblast somat
40	207.5	25.1	194	1	A36301	fibroblast growth
41	207.5	25.1	194	2	S26049	fibroblast growth
42	207.5	25.1	194	2	S49501	keratinocyte growth
43	206.5	25.0	207	2	JC5940	fibroblast growth
44	205.5	24.9	207	2	JC5941	fibroblast growth
45	204	24.7	212	2	JC7511	fibroblast growth

ALIGNMENTS

RESULT 1
A32398
basic fibroblast growth factor precursor, 22.5K form - human
N:Alternate names: bFGF; fibroblast growth factor 2; prostatic growth factor; prostatic
N:Contents: basic fibroblast growth factor, 18K form
C:Species: Homo sapiens (man)
C>Date: 31-Jul-1989 #sequence_revision 31-Dec-1993 #text_change 21-Jul-2000
C:Accession: A32398; A61537; A26642; B32878; S00297; A54316; B54316; A33624; A23824;
R:Prats, H.; Kagnad, M.; Prats, A.C.; Klagsbrun, M.; Lelias, J.M.; Lileuzun, P.; Chalo
Proc. Natl. Acad. Sci. U.S.A. 86, 1836-1840, 1989
A:Title: High molecular mass forms of basic fibroblast growth factor are initiated by
A:Reference number: A32398; MUID:89164522
A:Accession: A32398
A:Molecule type: mRNA
A:Residues: 1-210 <PRA>
A:Cross-references: GB:J04513; NID:g183083; PIDN:AA52531.1; PID:g459811
R:Shibata, F.; Balrd, A.; Florikiewicz, R.Z.
Growth Factors 4, 277-287, 1991
A:Title: Functional characterization of the human basic fibroblast growth factor gene
A:Reference number: A61537; MUID:92110035
A:Accession: A61537
A:Molecule type: DNA
A:Residues: 1-114 <SHI>
A:Note: authors translated the codon GGA for residue 47 as Ala
R:Kurokawa, T.; Sasada, R.; Iwane, M.; Igarashi, K.
FEBS Lett. 213, 189-194, 1987
A:Title: Cloning and expression of cDNA encoding human basic fibroblast growth factor
A:Reference number: A26642; MUID:87162468
A:Accession: A26642
A:Molecule type: mRNA
A:Residues: 56-210 <KUR>
A:Cross-references: GB:M27968; NID:g182562; PIDN:AA52448.1; PID:g182563
R:Abraham, J.A.; Whang, J.L.; Tumolo, A.; Mergia, A.; Fildes, J.C.
Cold Spring Harb. Symp. Quant. Biol. 51, 657-668, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence, genomic organization
A:Reference number: A90924; MUID:87217066
A:Accession: B32878
A:Molecule type: mRNA
A:Residues: 56-210 <ABR>
A:Note: the authors translated the codon GAA for residue 108 as Gly
R:Abraham, J.A.; Whang, J.L.; Tumolo, A.; Mergia, A.; Friedman, J.; Gospodarowicz, D.
EMBO J. 5, 2523-2528, 1986
A:Title: Human basic fibroblast growth factor: nucleotide sequence and genomic organization
A:Reference number: S00297; MUID:87058817
A:Accession: S00297
A:Status: not compared with conceptual translation
A:Molecule type: DNA
A:Residues: 1-155 <AB2>
A:Note: the authors translated the codon GAA for residue 108 as Gly
R:Shimoyama, Y.; Gotoh, M.; Ino, Y.; Sakamoto, M.; Kato, K.; Hirohashi, S.
Onc. J. Cancer Res. 82, 1265-1270, 1991
A:Title: Characterization of high-molecular-mass forms of basic fibroblast growth fac

Mol. Cell. Endocrinol. 49, 189-194, 1987
 A:Title: Isolation and partial characterization of basic fibroblast growth factor from h
 A:Reference number: A61551; MUID:87162856
 A:Accession: A61551
 A:Molecule type: protein
 A:Residues: 27-35, 'X', 37-41 <UE3>
 A:Experimental source: testes
 A:Note: this form appears to be identical to the renal form
 R:Ueno, N.; Baird, A.; Esch, F.; Shimasaki, S.; Ling, N.; Guillemin, R.
 Regul. Pept. 16, 135-145, 1986
 A:Title: Purification and partial characterization of a mitogenic factor from bovine liv
 A:Reference number: A60310; MUID:87119165
 A:Accession: A60310
 A:Molecule type: protein
 A:Residues: 23-35, 'X', 37-42 <UEN>
 A:Experimental source: liver
 R:Ueno, N.; Baird, A.; Esch, F.; Ling, N.; Guillemin, R.
 Biochem. Biophys. Res. Commun. 138, 580-588, 1986
 A:Title: Isolation of an amino terminal extended form of basic fibroblast growth factor.
 A:Reference number: A24819; MUID:86295737
 A:Contents: annotation
 A:Note: the amino end of this form was blocked: the peptide composition matched what was
 R:Gospodarowicz, D.; Baird, A.; Cheng, J.; Lul, G.M.; Esch, F.; Bohlen, P.
 Endocrinology 118, 82-90, 1986
 A:Title: Isolation of fibroblast growth factor from bovine adrenal gland: physicochemica
 A:Reference number: A61094; MUID:86081530
 A:Accession: A61094
 A:Molecule type: protein
 A:Residues: 12-25, 27-35, 'X', 37-40 <GOS>
 A:Experimental source: adrenal gland
 R:Esch, F.; Baird, A.; Ling, N.; Ueno, N.; Hall, F.; Denoroy, L.; Klepper, R.; Gospodarc
 Proc. Natl. Acad. Sci. U.S.A. 82, 6507-6511, 1985
 A:Title: Primary structure of bovine pituitary basic fibroblast growth factor (FGF) and
 A:Reference number: A01386; MUID:86016731
 A:Accession: A01386
 A:Molecule type: protein
 A:Residues: 12-157 <ESC>
 A:Experimental source: pituitary gland
 R:Baird, A.; Esch, F.; Bohlen, P.; Ling, N.; Gospodarowicz, D.
 Regul. Pept. 12, 201-213, 1985
 A:Title: Isolation and partial characterization of an endothelial cell growth factor fr
 A:Reference number: A60316; MUID:86093426
 A:Accession: A60316
 A:Molecule type: protein
 A:Residues: 27-35, 'X', 37-43 <BAI>
 A:Experimental source: kidney
 R:Bohlen, P.; Baird, A.; Esch, F.; Ling, N.; Gospodarowicz, D.
 Proc. Natl. Acad. Sci. U.S.A. 81, 5364-5368, 1984
 A:Title: Isolation and partial molecular characterization of pituitary fibroblast growth
 A:Reference number: A22054; MUID:84298139
 A:Accession: A22054
 A:Molecule type: protein
 A:Residues: 12-26 <BOH>
 C:Comment: The acidic and basic fibroblast growth factors are the major endothelial-cell
 cell types in vitro (although bFGF is 30-100 times more potent than aFGF in stimulating t
 C:Comment: This protein binds heparin more strongly than does aFGF.
 C:Keywords: fibroblast growth factor
 C:Keywords: alternative splicing; angiogenesis; blocked amino end; growth factor; hepari
 F:1-157/Product: basic fibroblast growth factor, uterine form #status predicted <MAV>
 F:4-157/Product: basic fibroblast growth factor, pituitary gamma form #status experiment
 F:12-157/Product: basic fibroblast growth factor, pituitary alpha form #status experiment
 F:16-157/Product: basic fibroblast growth factor, pituitary short form #status predicted
 F:23-157/Product: basic fibroblast growth factor, hepatic form #status experimental <MAT
 F:27-157/Product: basic fibroblast growth factor, renal form #status experimental <MAT
 F:29-33, 118-121/Region: heparin binding #status predicted
 F:4/Modified site: blocked amino end (Ala) (in mature form pituitary gamma) (probably ac

Query Match 98.9%; Score 817; DB 1; Length 157;
 Best Local Similarity 98.7%; Pred. No. 2,3e-73;
 Matches 153; Conservative 1; Mismatches 1; Indels 0; Gaps 0;
 QY 1 MAAGSITTLPALPEDGGSGAPPGHFKDKPKRLCKNGGFELRIHPDGRVDGVRKSDPHI 60

|||||
 Db 3 MAAGSITTLPALPEDGGSGAPPGHFKDKPKRLCKNGGFELRIHPDGRVDGVRKSDPHI 62
 QY 61 KIQLOAEEGCVSINGVCANRYLAKEDGRLLASVCYDECFEFLRLESNNYNTRSRY 120
 Db 63 KIQLOAEEGCVSINGVCANRYLAKEDGRLLASVCYDECFEFLRLESNNYNTRSRY 122
 QY 121 TSMYVALKRTGYKIGSKTGPCKAKILFLPMSAKS 155
 Db 123 TSMYVALKRTGYKIGSKTGPCKAKILFLPMSAKS 157
 RESULT 3
 A31674
 basic fibroblast growth factor precursor - rat
 N:Alternate names: bFGF
 C:Species: Rattus norvegicus (Norway rat)
 C:Date: 21-May-1990 #sequence_revision 21-May-1990 #text_change 16-Jul-1999
 C:Accession: A31674; S00876; S24309
 R:Shimasaki, S.; Emoto, N.; Koba, A.; Mercado, M.; Shibata, F.; Cooksey, K.; Baird, A
 Biochem. Biophys. Res. Commun. 157, 256-263, 1988
 A:Title: Complementary DNA cloning and sequencing of rat ovarian basic fibroblast gro
 A:Reference number: A31674; MUID:89061721
 A:Accession: A31674
 A:Molecule type: mRNA
 A:Residues: 1-154 <SHI>
 A:Cross-references: GB:M22427; NID:g204285; PIDN:AAA41210.1; PID:g204286
 R:Kurokawa, T.; Seno, M.; Igarashi, K.
 Nucleic Acids Res. 16, 5201, 1988
 A:Title: Nucleotide sequence of rat basic fibroblast growth factor cDNA.
 A:Reference number: S00876; MUID:88262516
 A:Accession: S00876
 A:Molecule type: mRNA
 A:Residues: 1-154 <KUR>
 A:Cross-references: EMBL:X07285; NID:g56203; PIDN:CAA30265.1; PID:g56204
 R:El-Husseini, A.E.D.; Paterson, J.A.; Wyal, Y.; Shu, R.P.C.
 Biochim. Biophys. Acta 1131, 314-316, 1992
 A:Title: PCR detection of the rat brain basic fibroblast growth factor (bFGF) mRNA co
 A:Reference number: S24309; MUID:92329546
 A:Accession: S24309
 A:Status: preliminary; translation not shown
 A:Molecule type: mRNA
 A:Residues: 35-154 <ELH>
 A:Cross-references: EMBL:X61697; NID:g56143; PIDN:CAA43863.1; PID:g56144
 C:Superfamily: fibroblast growth factor
 C:Keywords: growth factor
 F:1-9/Domain: signal sequence #status predicted <SIG>
 F:10-154/Product: basic fibroblast growth factor #status predicted <MAT>
 Query Match 96.7%; Score 798.5; DB 2; Length 154;
 Best Local Similarity 96.8%; Pred. No. 1.5e-71;
 Matches 150; Conservative 4; Mismatches 0; Indels 1; Gaps 1;
 QY 1 MAAGSITTLPALPEDGGSGAPPGHFKDKPKRLCKNGGFELRIHPDGRVDGVRKSDPHI 60
 Db 1 MAAGSITSLPALPEDGG -GAPPGHFKDKPKRLCKNGGFELRIHPDGRVDGVRKSDPHV 59
 QY 61 KIQLOAEEGCVSINGVCANRYLAKEDGRLLASVCYDECFEFLRLESNNYNTRSRY 120
 Db 60 KIQLOAEEGCVSINGVCANRYLAKEDGRLLASVCYDECFEFLRLESNNYNTRSRY 119
 QY 121 TSMYVALKRTGYKIGSKTGPCKAKILFLPMSAKS 155
 Db 120 TSMYVALKRTGYKIGSKTGPCKAKILFLPMSAKS 154
 RESULT 4
 C37360
 basic fibroblast growth factor - mouse
 C:Species: Mus musculus (house mouse)
 C:Date: 17-Apr-1993 #sequence_revision 17-Apr-1993 #text_change 16-Jul-1999
 C:Accession: C37360

RESULT 8
146711
fibroblast growth factor - rabbit (fragment)
C:Species: Oryctolagus cuniculus (domestic rabbit)
C>Date: 14-Feb-1997 #sequence_revision 14-Feb-1997 #text_change 16-Jul-1999
C:Accession: 146711
R:Winkles, J.A.; Friesel, R.; Alberts, G.F.; Janat, M.F.; Lian, G.
Am. J. Pathol. 143, 518-527, 1993
A:Title: Elevated expression of basic fibroblast growth factor in an immortalized rabbit
A:Reference number: 146711; MUID:93343209
A:Accession: 146711
A:Status: preliminary; translated from GB/EMBL/DBJ
A:Molecule type: mRNA
A:Residues: 1-137 <MIN>
A:Cross-references: GB:112034; NID:9165014; PID:AAA31248.1; PID:9165015
C:Superfamily: fibroblast growth factor

Query Match 89.3%; Score 738; DB 2; Length 137;
Best Local Similarity 99.3%; Pred. No. 1.2e-65;
Matches 136; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

OY 10 PALPEDGSGAPPGHFKPKRLCYCKNGGFRLRHPDGRVDGYREKSDPHIKLOAER 69
|||||
DB 1 PALPEDGSGAPPGHFKPKRLCYCKNGGFRLRHPDGRVDGYREKSDPHIKLOAER 60
OY 70 GVSISKVCANRYLAMKEDGRLLASCKVTDECFEERLESNNYNTYRSKRYTSWYALKR 129
|||||
DB 61 GVSISKVCANRYLAMKEDGRLLASCKVTDECFEERLESNNYNTYRSKRYTSWYALKR 120
OY 130 TGOYKLGSKTGPQKAI 146
|||||
DB 121 TGOYKLGSKTGPQKAI 137

RESULT 9
A40117
basic fibroblast growth factor - African clawed frog
C:Species: Xenopus laevis (African clawed frog)
C>Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
C:Accession: A40117; A29618
R:Kimmelman, D.; Abraham, J.A.; Haaparanta, T.; Palli, T.M.; Kirschner, M.W.
Science 242, 1053-1056, 1988
A:Title: The presence of fibroblast growth factor in the frog egg: its role as a natural
A:Reference number: A40117; MUID:89058621
A:Accession: A40117
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-155 <KIN>
A:Cross-references: GB:M18067; NID:9214177; PID:AAA49726.1; PID:9214178; GB:M21092
R:Kimmelman, D.; Kirschner, M.
Cell 51, 869-877, 1987
A:Title: Synergistic induction of mesoderm by FGF and TGF-beta and the identification of
A:Reference number: A29618; MUID:88052890
A:Accession: A29618
A:Molecule type: mRNA
A:Residues: 95-110, 112-155 <RI2>
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor

Query Match 83.2%; Score 687; DB 1; Length 155;
Best Local Similarity 83.9%; Pred. No. 1.5e-60;
Matches 130; Conservative 9; Mismatches 16; Indels 0; Gaps 0;

OY 1 MAAGSTTTPALPEDGSGAPPGHFKPKRLCYCKNGGFRLRHPDGRVDGYREKSDPHI 60
|||||
DB 1 MAAGSTTTPALPEDGSGAPPGHFKPKRLCYCKNGGFRLRHPDGRVDGYREKSDPHI 60
OY 61 KIOLAEEGVSISKVCANRYLAMKEDGRLLASCKVTDECFEERLESNNYNTYRSRY 120
|||||
DB 61 KIOLAEEGVSISKVCANRYLAMKEDGRLLASCKVTDECFEERLESNNYNTYRSRY 120

OY 121 TSMYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 155
:|||||
DB 121 TSMYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 155

RESULT 10
A32484
basic fibroblast growth factor precursor, 25K - guinea pig (fragments)
C:Species: Cavia porcellus (guinea pig)
C>Date: 20-Oct-1989 #sequence_revision 20-Oct-1989 #text_change 15-Jun-1996
C:Accession: A32484
R:Sommer, A.; Moscatelli, D.; Rifkin, D.B.
Biochem. Biophys. Res. Commun. 160, 1267-1274, 1989
A:Title: An amino-terminally extended and post-translationally modified form of a 25K
A:Reference number: A32484; MUID:89273588
A:Accession: A32484
A:Status: preliminary; nucleic acid sequence not shown; not compared with conceptual
A:Molecule type: mRNA
A:Residues: 1-125 <SOM>
C:Superfamily: fibroblast growth factor

Query Match 56.7%; Score 468.5; DB 2; Length 125;
Best Local Similarity 63.2%; Pred. No. 4.5e-39;
Matches 98; Conservative 2; Mismatches 4; Indels 51; Gaps 3;

OY 1 MAAGSTTTPALPEDGSGAPPGHFKPKRLCYCKNGGFRLRHPDGRVDGYREKSDPHI 60
|||||
DB 22 MAAGSTTTPALPEDGSGAPPGHFKPKR-----NGGFRL----- 57
OY 61 KIOLAEEGVSISKVCANRYLAMKEDGRLLASCKVTDECFEERLESNNYNTYRSRY 120
|||||
DB 58 -LOLAEDR-----CVTDECFEERLESNNYNTYRSRY 90
OY 121 TSMYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 155
:|||||
DB 91 TSMYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 125

RESULT 11
A60721
acidic fibroblast growth factor - golden hamster
N:Alternate names: heparin-binding growth factor 1
C:Species: Mesocricetus auratus (golden hamster)
C>Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999
C:Accession: A60721
R:Hall, J.A.; Harris, M.A.; Malark, M.; Mansson, P.E.; Zhou, H.; Harris, S.E.
J. Cell. Biochem. 43, 17-26, 1990
A:Title: Characterization of the hamster DDT-1 cell aFGF/HGBF-1 gene and cDNA and its
A:Reference number: A60721; MUID:90270291
A:Accession: A60721
A:Status: not compared with conceptual translation
A:Molecule type: DNA
A:Residues: 1-155 <HAL>
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor; heparin binding

Query Match 50.7%; Score 418.5; DB 1; Length 155;
Best Local Similarity 54.8%; Pred. No. 5e-34;
Matches 86; Conservative 16; Mismatches 50; Indels 5; Gaps 2;

OY 1 MAAGSTTTPALPEDGSGAPPGHFKPKRLCYCKNGGFRLRHPDGRVDGYREKSDPHI 60
|||||
DB 1 MAAGSTTTPALPEDGSGAPPGHFKPKRLCYCKNGGFRLRHPDGRVDGYREKSDPHI 57
OY 61 KIOLAEEGVSISKVCANRYLAMKEDGRLLASCKVTDECFEERLESNNYNTYRSRY 120
|||||
DB 58 OLQLSAESAGEYIKGTETGQYLAADTGLYGSQPPNECEFLERLEENHNNTYTSKKH 117
OY 121 T--SWYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 155
:|||||
DB 118 AERNMFVGLKNGSCKRGPRTHYGOKAILFLPLPVS 154

```

RESULT 12
A60130
acidic fibroblast growth factor - chicken
M:Alternate names: endothelial cell growth factor
C:Species: Gallus gallus (chicken)
C:Date: 03-Mar-1993 #sequence_revision 03-Mar-1993 #text_change 16-Jul-1999
C:Accession: A60130; S02639
R:Schnerch, H.; Risau, W.
Development 111, 1143-1154, 1991
A:Title: Differentiating and mature neurons express the acidic fibroblast growth factor
A:Reference number: A60130; MUID:91347925
A:Accession: A60130
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-155 <SCH>
A:Cross-references: GB:S63263; NID:9234372; PID:AA019629.1; PID:9234373
R:Risau, W.; Gautschi-Sova, P.; Boehlen, P.
EMBO J. 7, 959-962, 1988
A:Title: Endothelial cell growth factors in embryonic and adult chick brain are related
A:Reference number: S02639; MUID:88296438
A:Accession: S02639
A:Molecule type: protein
A:Residues: 22-30, 'X', 32-44, 'X', 46-48 <RIS>
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor

Query Match 49.7%; Score 410.5; DB 2; Length 155;
Best Local Similarity 54.9%; Pred. No. 3.1e-33;
Matches 84; Conservative 20; Mismatches 44; Indels 5; Gaps 2;

OY 1 MAAGSTTTTALPEDGSGAFPPGHFKDPKRLCKNGEFLRHDPGRVDGVERKSDPHI 60
    ||||| ||| | | | | | | | | | | | | | | | | | | | | | | | | |
DB 1 MAEGTITTFALTFRG---LPNGTKKRLKXCSNGHFRLRPLPGCKYDGRDSDQHI 57
    ||||| ||| | | | | | | | | | | | | | | | | | | | | | | | | |
OY 61 KIQQAERGVSVISIKVCANRYLAKEDGRLLASKCVTDECFEERLESNNNTYRSRY 120
    :||| ||| | | | | | | | | | | | | | | | | | | | | | | | | |
DB 58 QQLSADVEGEVYIKSTASGQYLAMDTNGLYGSQPLGEECLFLEENHYTYTSKRH 117
    :||| ||| | | | | | | | | | | | | | | | | | | | | | | | | |
OY 121 T--SWYVALKRTGQVYKLSKTKGTGQKALILFLPM 151
    :||| ||| | | | | | | | | | | | | | | | | | | | | | | | | |
DB 118 ADKNMFVGLKNGSKLGPRTHYGAKALLFLPL 150
    :||| ||| | | | | | | | | | | | | | | | | | | | | | | | | |

RESULT 13
A33665
acidic fibroblast growth factor 1 precursor [validated] - human
M:Alternate names: beta-ECGF; endothelial cell growth factor Delta; heparin-binding growth
C:Species: Homo sapiens (man)
C:Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 08-Dec-2000
C:Accession: A33665; A32316; S18217; A43804; A24662; JH0707; S35535; S35536; 139413; A23
R:Merila, A.; Tischer, E.; Graves, D.; Tumlolo, A.; Miller, J.; Gospodarowicz, D.; Abrahm
Biochem. Biophys. Res. Commun. 164, 1121-1129, 1989
A:Title: Structural analysis of the gene for human acidic fibroblast growth factor.
A:Reference number: A33665; MUID:90073637.
A:Accession: A33665
A:Molecule type: DNA
A:Residues: 1-155 <MER>
A:Cross-references: GB:M30491
R:Wang, W.P.; Lehtoma, K.; Varban, M.L.; Krishnan, I.; Chiu, I.M.
Mol. Cell. Biol. 9, 2387-2395, 1989
A:Title: Cloning of the gene coding for human class 1 heparin-binding growth factor and
A:Reference number: A32316; MUID:89343957
A:Accession: A32316
A:Molecule type: DNA
A:Residues: 1-155 <WAN>
A:Cross-references: GB:M23087; NID:9183875; PID:AAA52638.1; PID:9386768
R:Wang, W.P.; Quick, D.; Balcerzak, S.P.; Needleman, S.W.; Chiu, I.M.
Oncogene 6, 1521-1529, 1991
A:Title: Cloning and sequence analysis of the human acidic fibroblast growth factor gene
A:Reference number: S18217; MUID:92019819

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A:Accession: S18217
A:Molecule type: DNA
A:Residues: 1-155 <MA2>
A:Cross-references: EMBL:M23086
R:Chiu, I.M.; Wang, W.P.; Lehtoma, K.
Oncogene 5, 755-762, 1990
A:Title: Alternative splicing generates two forms of mRNA coding for human heparin-bi
A:Reference number: A43804; MUID:90265618
A:Accession: A43804
A:Molecule type: mRNA
A:Residues: 1-155 <CHI>
A:Cross-references: EMBL:X51943; NID:932435; PID:CAA36206.1; PID:932436
R:Jaye, M.; Howk, R.; Burgess, W.; Ricca, G.A.; Chiu, I.M.; Ravera, M.W.; O'Brien, S.
Science 233, 541-545, 1986
A:Title: Human endothelial cell growth factor: cloning, nucleotide sequence, and chro
A:Reference number: A24662; MUID:86261805
A:Accession: A24662
A:Molecule type: mRNA
A:Residues: 1-155 <JAY>
A:Cross-references: GB:M13361; NID:9181941; PID:AAA79245.1; PID:9181942
R:Yu, Y.L.; Kha, H.; Golden, J.A.; Mischel, A.A.J.; Goetzl, E.J.; Turck, C.W.
J. Exp. Med. 175, 1073-1080, 1992
A:Title: An acidic fibroblast growth factor protein generated by alternate splicing a
A:Reference number: JH0707; MUID:92202857
A:Accession: JH0707
A:Molecule type: mRNA
A:Residues: 1-155 <YUY>
A:Cross-references: GB:X65778; NID:9396163; PID:CAA46661.1; PID:9396164
R:Payson, R.A.; Canatan, H.; Chotani, M.A.; Wang, W.P.; Harris, S.E.; Myers, R.L.; Ch
Nucleic Acids Res. 21, 489-495, 1993
A:Title: Cloning of two novel forms of human acidic fibroblast growth factor (afgf) m
A:Reference number: S35535; MUID:93181239
A:Accession: S35535
A:Status: translation not shown
A:Molecule type: mRNA
A:Residues: 1-58 <PAY>
A:Cross-references: GB:L01485
A:Accession: S35536
A:Status: translation not shown
A:Molecule type: mRNA
A:Residues: 1-58 <PA2>
A:Cross-references: GB:L01487
R:Crumley, G.; Dionne, C.A.; Jaye, M.
Biochem. Biophys. Res. Commun. 171, 7-13, 1990
A:Title: The gene for human acidic fibroblast growth factor encodes two upstream exon
A:Reference number: 139412; MUID:90365758
A:Accession: 139413
A:Status: translation not shown
A:Molecule type: mRNA
A:Residues: 1-40 <RES>
A:Cross-references: GB:M60515; NID:9178226; PID:AAA51672.1; PID:9553170; GB:M60516;
R:Harper, J.W.; Strydom, D.J.; Lobd, R.R.
Biochemistry 25, 4097-4103, 1986
A:Reference number: A23553; MUID:86296647
A:Accession: A23553
A:Molecule type: protein
A:Residues: 16-155 <HAR>
R:Giemenes-Gallego, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.
Biochem. Biophys. Res. Commun. 138, 611-617, 1986
A:Title: The complete amino acid sequence of human brain-derived acidic fibroblast gr
A:Reference number: A24820; MUID:86295741
A:Accession: A24820
A:Molecule type: protein
A:Residues: 16-155 <GIM>
R:Giemenes-Gallego, G.; Conn, G.; Hatcher, V.B.; Thomas, K.A.
Biochem. Biophys. Res. Commun. 135, 541-548, 1986
A:Title: Human brain-derived acidic and basic fibroblast growth factors: amino termin
A:Reference number: A90122; MUID:86186784
A:Accession: A24243
A:Molecule type: protein
A:Residues: 16-47 <G12>
A:Experimental source: brain
R:Gautschi, P.; Fritter-Schroder, M.; Bohlen, P.

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EBS Lett. 204, 203-207, 1986
 A:Title: Partial molecular characterization of endothelial cell microgens from human brai
 A:Reference number: A91364; MUID:86275260
 A:Accession: A24301
 A:Molecule type: protein
 A:Residues: 16-30, 'X', 32-49 <GAU>
 R:Gautschi-Sova, P.; Muller, T.; Bohlen, P.
 Biochem. Biophys. Res. Commun. 140, 874-880, 1986
 A:Title: Amino acid sequence of human acidic fibroblast growth factor.
 A:Reference number: A26386; MUID:87048871
 A:Accession: A26386
 A:Molecule type: protein
 A:Residues: 16-155 <GA2>
 A:Experimental source: brain
 R:Chavan, A.U.; Haley, B.E.; Volkin, D.E.; Marfia, K.E.; Verticelli, A.M.; Bruner, M.W.;
 Biochemistry 33, 7193-7202, 1994
 A:Title: Interaction of nucleotides with acidic fibroblast growth factor (FGF-1).
 A:Reference number: A53639; MUID:94271773
 A:Accession: A53639
 A:Molecule type: protein
 A:Residues: 16-30, 'X', 32-38; 73-75, 'X', 77-97, 'X', 99-101; 128-131, 'X', 133-140, 'X', 142-152
 C:Genetics:
 A:Gene: GDB:FCF1; FCFPA
 A:Cross-references: GDB:119909; OMIM:131220
 A:Map position: Sq31.3-Sq33.2
 A:Introns: 57/1, 91/3
 C:Superfamily: fibroblast growth factor
 C:Keywords: alternative splicing; growth factor; heparin binding
 F:16-155/Product: fibroblast growth factor 1 #status experimental <MAT>
 F:129/Binding site: carbohydrate (Asn) (covalent) #status absent

	Query Match	49.6%	Score 409.5	DB 1	Length 155;
	Best Local Similarity	54.1%	Pred. No. 3.9e-33		
	Matches 85; Conservative	16;	Mismatches 51;	Indels 5;	Gaps 2;
QY	1 MAAGSITTLPALPEDGSGAAPPFGHFKDPKRLYCCKNGGFLLRIHPDGRVDGYREKSDPHI	60			
	::: ::: ::: ::: :::				
Dd	1 MAEGTITFTALTKEFN--LPFGNYKKPKRILLYCSNGSHFLRIELPDGVIVGNDRSSDHI	57			
	::: ::: ::: ::: :::				
QY	61 KLQLDAERGVYSTIGVCANRYLAKMEKGRLASCVTDCEFFFRLESNNNTYTRSKRY	120			
	::: ::: ::: ::: ::: :::				
Dd	58 QLQLSAESVGEVYIKSTETGGYLADDTGLLYGSOTPNNECFLTERLEENHNITYISKKH	117			
	::: ::: ::: ::: ::: :::				
QY	121 T--SMYVALKRTGYKLGSKTGPGOKATLLFPLMSAKS	155			
	::: ::: ::: ::: ::: :::				
Dd	118 AEKNMFVLKKNKSGCKRPRTHYGOKALFLFLPVS	154			

RESULT 14
S04147
acidic fibroblast growth factor 1 - rat
N:Alternate names: heparin-binding growth factor 1
C:Species: Rattus norvegicus (Norway rat)
C:Date: 28-Feb-1990 #sequence_revision 28-Feb-1990 #text_change 16-Jul-1999
C:Accession: S04147
R:Goodrich, S.P.; Van, G.C.; Bahrenburg, K.; Mansson, P.E.
Nucleic Acids Res. 17, 2867, 1989
A:Title: The nucleotide sequence of rat heparin binding growth factor 1 (HBGF-1).
A:Reference number: S04147; M0ID:89240051
A:Accession: S04147
A:Molecule type: mRNA
A:Residues: 1-155 <GOO>
A:Cross-references: EMBL:X14232; NID:g56351; PIDN:CAA32448.1; PID:g56352
C:Superfamily: fibroblast growth factor
C:Keywords: growth factor; heparin binding

Query Match	49.08%	Score 404.5	DB 2	length 155
Best Local Similarity	53.58%	Pred. No. 1.2e-37		
Matches 84	Conservative 17	Mismatches 51	Indels 5	Gaps 5

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Db      1 MAEGITITFAITLRFN---LPLGNKKPKKLKLYCSNGGHHLLRLIPDGYTGVCTDRSDQH 57
Oy      61 KLQLOAEERGVSATKGCVCANRYLAKMKEDGRLLASKCVTDCFFPERLESNNVTYSRKY 120
Db      58 QLOLSAEGAGVYIKGTETGYOLMDPEGLGYSGOTFNEBCLFLERLEENHNVTYSKKA 117
Oy      121 T--SWYVALIKRTGYKLGSKGPGOKAAILFLPMASK 155
Db      118 AEKNMFVGLKKNKSGCKRGRPHNYQOKAILFLPLPVSS 154

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RESULT 15
D37360
acidic fibroblast growth factor - mouse
N:Alternate names: aFGF; FGF-1
C:Species: Mus musculus (house mouse)
C:Date: 17-Apr-1993 #sequence_revision 17-Apr-1993 #text_change 16-Jul-1999
C:Accession: D37360; JC5231
R:Hebert, J.M.; Basilico, C.; Goldfarb, M.; Haub, O.; Martin, G.R.
Dev. Biol. 138, 454-463, 1990
A:Title: Isolation of cDNAs encoding four mouse FGF family members and characterization
A:Reference number: A37360; MUID:90201563
A:Accession: D37360
A:Status: preliminary
A:Molecule type: mRNA
A:Residues: 1-155 <HEB>
A:Cross-references: GB:M30641; NID:g193284; PIDN:AAA37618.1; PID:g309236
R:Madial, F.; Hackshaw, K.V.; Chiu, I.M.
Gene 179, 231-236, 1996
A:Title: Cloning and characterization of the mouse Fgf-1 gene.
A:Reference number: JC5231; MUID:97128312
A:Accession: JC5231
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 1-155 <MAD>
A:Cross-references: GB:U36456
C:Comment: This protein is an inducer of neovascularization in angiogenic disease in
C:Genetics:
A:Gene: Fgf-1
A:Introns: 57/1; 91/3
C:Superfamily: fibroblast growth factor

[illegible]

Search completed: June 7, 2002, 14:37:16
Job time: 243 sec

GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:46:42 ; Search time 23.13 Seconds

(without alignments)
259,470 Million cell updates/sec

Title: US-09-802-365-8

Perfect score: 826
Sequence: 1 MAAGSITTLPALPEDGSGA.....GSKTGPQKAILFLPMASKS 155

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 105224 seqs, 38719550 residues

Total number of hits satisfying chosen parameters: 105224

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%
Listing first 45 summaries

Database : SwissProt_40.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	826	100.0	155	1	FGF2_HUMAN
2	817	98.9	155	1	FGF2_BOVIN
3	811	98.2	155	1	FGF2_SHEEP
4	798.5	96.7	154	1	FGF2_RAT
5	783.5	94.9	154	1	FGF2_MOUSE
6	760.5	92.1	156	1	FGF2_MONDO
7	759	91.9	158	1	FGF2_CHICK
8	738	89.3	137	1	FGF2_RABIT
9	687	83.2	155	1	FGF2_XENLA
10	418.5	50.7	155	1	FGF1_MESAU
11	410.5	49.7	155	1	FGF1_CHICK
12	409.5	49.6	155	1	FGF1_HUMAN
13	404.5	49.0	155	1	FGF1_MOUSE
14	403.5	48.8	152	1	FGF1_PIG
15	393.5	47.6	155	1	FGF1_BOVIN
16	265	32.1	194	1	FGF4_CHICK
17	255.5	30.9	206	1	FGF4_HUMAN
18	253	30.6	256	1	FGF3_BRARE
19	251	30.3	220	1	FGF3_CHICK
20	250	30.3	208	1	FGF6_MOUSE
21	249	30.1	208	1	FGF6_HUMAN
22	248.5	30.1	206	1	FGF4_BOVIN
23	242.5	29.4	264	1	FGF5_MOUSE
24	242.5	29.4	266	1	FGF5_RAT
25	241.5	29.2	202	1	FGF4_MOUSE
26	239	28.9	187	1	FGF4_XENLA
27	237.5	28.8	237	1	FGF3_XENLA
28	237	28.7	245	1	FGF3_MOUSE
29	236	28.6	239	1	FGF3_HUMAN
30	234.5	28.4	192	1	FGF8_XENLA
31	234	28.3	268	1	FGF5_HUMAN
32	217	26.3	208	1	FGF9_HUMAN
33	217	26.3	208	1	FGF9_MOUSE

34	217	26.3	208	1	FGF9_RAT	P36364	rattus norv
35	213	25.8	209	1	FGF9_XENLA	O91875	xenopus lae
36	210.5	25.5	194	1	FGF7_CANFA	P79150	cantis famil
37	210	25.4	211	1	FGF8_HUMAN	O9np95	homo sapien
38	209.5	25.4	194	1	FGF7_MOUSE	P36363	mus muscicu
39	207.5	25.1	194	1	FGF7_HUMAN	P21781	homo sapien
40	207.5	25.1	194	1	FGF7_SHEEP	P48808	ovis aries
41	206.5	25.0	207	1	FGFG_RAT	O54769	rattus norv
42	205.5	24.9	207	1	FGFG_HUMAN	O43320	homo sapien
43	204.5	24.8	194	1	FGF7_PIG	O9n198	sus scrofa
44	203	24.6	208	1	FGF9_HUMAN	O15520	homo sapien
45	203	24.6	215	1	FGF9_RAT	P70492	rattus norv

ALIGNMENTS

RESULT	1	STANDARD;	PRT;	155 AA.
FGF2_HUMAN				
ID	FGF2_HUMAN			
AC	P09038;			
DT	01-NOV-1988 (Rel. 09, Created)			
DT	01-NOV-1988 (Rel. 09, Last sequence update)			
DT	01-MAR-2002 (Rel. 41, Last annotation update)			
DE	Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast growth factor) (BFGF) (Prostatiopin).			
GN	FGF2 OR FGFB.			
OS	Homo sapiens (Human).			
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;			
OC	Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.			
OX	NCBI_TaxID=9606;			
RN	[1]			
RP	SEQUENCE FROM N.A.			
RX	MEDLINE=87053817; PubMed=3780670;			
RA	Abraham J.A., Whang J.L., Tumolo A., Mergia A., Friedman J.,			
RA	Gospodarowicz D., Fiddes J.C.;			
RT	"Human basic fibroblast growth factor: nucleotide sequence and genomic organization.";			
RT	EMBO J. 5:2523-2528(1986).			
RN	[2]			
RP	SEQUENCE FROM N.A.			
RX	MEDLINE=87217066; PubMed=3472745;			
RA	Abraham J.A., Whang J.L., Tumolo A., Mergia A., Fiddes J.C.;			
RT	"Human basic fibroblast growth factor: nucleotide sequence, genomic organization, and expression in mammalian cells.";			
RT	Cold Spring Harb. Symp. Quant. Biol. 51:657-668(1986).			
RN	[3]			
RP	SEQUENCE FROM N.A.			
RX	MEDLINE=87213238; PubMed=3579930;			
RA	Sommer A., Brewer M.T., Thompson R.C., Moscatelli D., Presta M.,			
RA	Rifkin D.B.;			
RT	"A form of human basic fibroblast growth factor with an extended amino terminus.";			
RT	Biochem. Biophys. Res. Commun. 144:543-550(1987).			
RN	[4]			
RP	SEQUENCE FROM N.A.			
RX	MEDLINE=87162468; PubMed=2435575;			
RA	Kurokawa T., Sasada R., Iwanaga M., Igarashi K.;			
RT	"Cloning and expression of cDNA encoding human basic fibroblast growth factor.";			
RT	FEBS Lett. 213:189-194(1987).			
RN	[5]			
RP	SEQUENCE FROM N.A.			
RX	MEDLINE=89184522; PubMed=2538817;			
RA	Prats H., Kaghad M., Prats A.C., Klagesbrun M., Lelias J.M.,			
RA	Ulaunz P., Chalou P., Tauber J.P., Amalric F., Smith J.A.,			
RT	Caput D.;			
RT	"High molecular mass forms of basic fibroblast growth factor are initiated by alternative CUG codons.";			
RT	Proc. Natl. Acad. Sci. U.S.A. 86:1836-1840(1989).			
RN	[6]			
RP	SEQUENCE OF 10-35.			
RX	MEDLINE=86275260; PubMed=3732516;			

RA Gautschi P., Frater-Schroeder M., Boehlen P.;
 RT "Partial molecular characterization of endothelial cell mitogens from
 human brain: acidic and basic fibroblast growth factors.";
 RL FEBS Lett. 204:203-207(1986).
 [17]
 RP SEQUENCE OF 10-39.
 RX MEDLINE=86186784; PubMed=3964259;
 RA Glanzer-Galligo G., Conn G., Hatcher V.B., Thomas K.A.;
 RT "Human brain-derived acidic and basic fibroblast growth factors:
 amino terminal sequences and specific mitogenic activities.";
 RL Biochem. Biophys. Res. Commun. 135:541-548(1986).
 [18]
 RP SEQUENCE OF 2-22.
 RX MEDLINE=87156686; PubMed=2435284;
 RA Story M.T., Esch F., Shimasaki S., Sasse J., Jacobs S.C., Lawson R.K.;
 RT "Amino-terminal sequence of a large form of basic fibroblast growth
 factor isolated from human benign prostatic hyperplastic tissue.";
 RL Biochem. Biophys. Res. Commun. 142:702-709(1987).
 [19]
 RN X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS).
 RP MEDLINE=91195367; PubMed=1707542;
 RX Eriksson A.E., Cousens L.S., Weaver L.H., Matthews B.W.;
 RT "Three-dimensional structure of human basic fibroblast growth
 factor.";
 RL Proc. Natl. Acad. Sci. U.S.A. 88:3441-3445(1991).
 [10]
 RN X-RAY CRYSTALLOGRAPHY (1.6 ANGSTROMS).
 RP MEDLINE=94004464; PubMed=7691311;
 RX Eriksson A.E., Cousens L.S., Matthews B.W.;
 RT "Refinement of the structure of human basic fibroblast growth factor
 at 1.6-A resolution and analysis of presumed heparin binding sites by
 selenate substitution.";
 RL Protein Sci. 2:1274-1284(1993).
 [11]
 RN X-RAY CRYSTALLOGRAPHY (1.8 ANGSTROMS).
 RP MEDLINE=91195368; PubMed=1849658;
 RX Zhang J., Cousens L.S., Barr P.J., Sprang S.R.;
 RT "Three-dimensional structure of human basic fibroblast growth factor,
 a structural homolog of interleukin 1 beta.";
 RL Proc. Natl. Acad. Sci. U.S.A. 88:3446-3451(1991).
 [12]
 RN X-RAY CRYSTALLOGRAPHY (1.6 ANGSTROMS).
 RP MEDLINE=92121151; PubMed=1769963;
 RX Ago H., Kitagawa Y., Fujishima A., Matsuura Y., Katsube Y.;
 RT "Crystal structure of basic fibroblast growth factor at 1.6-A
 resolution.";
 RL J. Biochem. 110:360-363(1991).
 [13]
 RN X-RAY CRYSTALLOGRAPHY (2.8 ANGSTROMS).
 RP MEDLINE=91059583; PubMed=1702556;
 RX Zhu X., Komiya H., Chirino A., Faham S., Fox G.M., Arakawa T.,
 RA Hsu B.T., Rees D.C.;
 RT "Three-dimensional structures of acidic and basic fibroblast growth
 factors.";
 RL Science 251:90-93(1991).
 [14]
 RP STRUCTURE BY NMR.
 RX MEDLINE=97040521; PubMed=8885834;
 RA Moy F.J., Seddon A.P., Boehlen P., Powers R.;
 RT "High-resolution solution structure of basic fibroblast growth factor
 determined by multidimensional heteronuclear magnetic resonance
 spectroscopy.";
 RL Biochemistry 35:13552-13561(1996).
 CC -I- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
 IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
 VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
 CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -I- SUBUNIT: MONOMER.
 CC -I- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
 ACEF.
 CC -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC -----
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 CC -----
 DR EMBL; M17599; AAA52534.1; ALT_INIT.
 DR EMBL; X04431; CAA28027.1; -
 DR EMBL; X04432; CAA28028.1; -
 DR EMBL; X04433; CAA28029.1; -
 DR EMBL; M27968; AAA52448.1; -
 DR EMBL; J04513; AAA52533.1; ALT_INIT.
 DR PIR; A25824; A25824.
 DR PIR; A26642; A26642.
 DR PIR; B24243; B24243.
 DR PIR; B24301; B24301.
 DR PIR; B32878; B32878.
 DR PIR; S00297; S00297.
 DR PDB; 2FGF; 15-APR-92.
 DR PDB; 4FGF; 15-JUL-93.
 DR PDB; 1FGA; 15-JUL-93.
 DR PDB; 1BFB; 03-APR-96.
 DR PDB; 1BFC; 03-APR-96.
 DR PDB; 1BFE; 16-JUN-97.
 DR PDB; 1BFG; 31-JAN-94.
 DR PDB; 2BFH; 30-APR-94.
 DR PDB; 1BLA; 08-NOV-96.
 DR PDB; 1BLD; 08-NOV-96.
 DR MIM; 134920; -
 DR InterPro; IPR002209; HBGF_FGF.
 DR InterPro; IPR002348; IL1_HBGF.
 DR Pfam; PF00167; FGF; 1.
 DR PRINTS; PRO0262; ILHBGF.
 DR PRODOM; PD000831; HBGF_FGF; 1.
 DR SMART; SM00442; FGF; 1.
 DR PROSITE; PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
 KW 3D-structure.
 FT PROPEP 1 9
 FT CHAIN 10 155
 FT SITE 46 48
 FT SITE 88 90
 FT BINDING 27 31
 FT BINDING 116 119
 FT STRAND 30 34
 FT TURN 35 38
 FT STRAND 39 43
 FT TURN 45 46
 FT STRAND 49 52
 FT TURN 55 56
 FT HELIX 58 60
 FT STRAND 62 66
 FT TURN 69 70
 FT STRAND 71 76
 FT TURN 77 80
 FT STRAND 81 85
 FT TURN 87 88
 FT STRAND 91 94
 FT HELIX 99 101
 FT STRAND 103 107
 FT TURN 109 110
 FT STRAND 113 117
 FT TURN 121 122
 FT STRAND 124 124
 FT STRAND 127 127
 FT TURN 129 130
 FT STRAND 132 133
 FT HELIX 136 138
 FT TURN 141 142
 FT HELIX 144 146
 FT STRAND 148 152
 FT SEQUENCE 155 AA; 17254 MW; B6CE13373007129 CRC64;

Query Match 100.0%; Score 826; DB 1; Length 155;
 Best Local Similarity 100.0%; Pred. No. 2,6e-79;
 Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MAAGSITLPALEPDGSGAEPFGKDPKRLYCKNGGFELIHPDGRVGVREKSDPHI 60
 D 1 MAAGSITLPALEPDGSGAEPFGKDPKRLYCKNGGFELIHPDGRVGVREKSDPHI 60
 QY 61 KLQLOAERGVVSTKGCANRYLAKMEDGRLASKCVTDECFEERLESNNNTYRSRY 120
 D 61 KLQLOAERGVVSTKGCANRYLAKMEDGRLASKCVTDECFEERLESNNNTYRSRY 120
 QY 121 TSMVALKRTGQYKLGSKTGPQOKAILFLPMASAKS 155
 D 121 TSMVALKRTGQYKLGSKTGPQOKAILFLPMASAKS 155

RESULT 2
 FGF2_BOVIN STANDARD; PRT; 155 AA.
 AC P03969;
 DT 23-OCT-1986 (Rel. 02, Created)
 DT 23-OCT-1986 (Rel. 02, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 2 precursor (HBGF-2) (basic fibroblast growth factor) (BFGF) (Prostatropin) [Contains: Kidney-derived growth factor].
 GN FGF2 OR FGF-2.
 OS Bos taurus (Bovine).
 OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae; Bovidae; Bovinae; Bos.
 OC NCBI_TaxID:9913;
 RN [1]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=86261806; PubMed=2425435;
 RA Abraham J.A., Mergia A., Whang J.L., Tumolo A., Friedman J., Hierlild K.A., Gospodarowicz D., Fiddes J.C.;
 RT "Nucleotide sequence of a bovine clone encoding the angiogenic protein, basic fibroblast growth factor.";
 RL Science 233:545-548(1986).
 RN [2]
 RP SEQUENCE FROM N.A.
 RX MEDLINE=87217066; PubMed=3472745;
 RA Abraham J.A., Whang J.L., Tumolo A., Mergia A., Fiddes J.C.;
 RT "Human basic fibroblast growth factor: nucleotide sequence, genomic organization, and expression in mammalian cells.";
 RL Cold Spring Harb. Symp. Quant. Biol. 51:657-668(1986).
 RN [3]
 RP SEQUENCE OF 10-155.
 RX MEDLINE=86016731; PubMed=3863109;
 RA Esch F., Baird A., Ling N., Ueno N., Hill F., Denoroy L., Klepper R., Gospodarowicz D., Boehlen P., Guillemin R.;
 RT "Primary structure of bovine pituitary basic fibroblast growth factor (FGF) and comparison with the amino-terminal sequence of bovine brain acidic FGF.";
 RL Proc. Natl. Acad. Sci. U.S.A. 82:6507-6511(1985).
 RN [4]
 RP SEQUENCE OF 1-9.
 RX MEDLINE=86295737; PubMed=3741423;
 RA Ueno N., Baird A., Esch F., Ling N., Guillemin R.;
 RT "Isolation of an amino terminal extended form of basic fibroblast growth factor.";
 RL Biochem. Biophys. Res. Commun. 138:580-588(1986).
 RN [5]
 RP SEQUENCE OF 25-41.
 RC TISSUE=Kidney;
 RX MEDLINE=86095426; PubMed=4081126;
 RA Baird A., Esch F., Boehlen P., Ling N., Gospodarowicz D.;
 RT "Isolation and partial characterization of an endothelial cell growth factor from the bovine kidney: homology with basic fibroblast growth factor.";

RL Regul. Pept. 12:201-213(1985).
 RN [6]
 RP SEQUENCE OF 21-40.
 RC TISSUE=Kidney;
 RX MEDLINE=87119165; PubMed=3809608;
 RA Ueno N., Baird A., Esch F., Shimasaki S., Ling N., Guillemin R.;
 RT "Purification and partial characterization of a mitogenic factor from bovine liver: structural homology with basic fibroblast growth factor.";
 RL Regul. Pept. 16:135-145(1986).
 RN [7]
 RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).
 RX MEDLINE=91095983; PubMed=1702556;
 RA Zhu X., Komiya H., Chirino A., Faham S., Fox G.M., Arakawa T., Hsu B.T., Rees D.C.;
 RT "Three-dimensional structures of acidic and basic fibroblast growth factors.";
 RL Science 251:90-93(1991).
 CC -!- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -!- SUBUNIT: MONOMER.
 CC -!- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES AFGF.
 CC -!- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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 CC
 CC EMBL: M13440; AAA0518.1; -.
 DR PIR: A24663; GKBOB.
 DR PIR: A24819; A24819.
 DR PIR: A32878; A32878.
 DR PDB: 1BAS; 31-OCT-93.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; IIL-HBGF.
 DR Pfam: PF00167; FGF; 1.
 DR PRINTS: PR00262; IILHBGF.
 DR ProDom: PD000831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding;
 KW 3D-structure.
 FT PROPEP 1 9
 FT CHAIN 10 155
 FT SITE 25 155
 FT SITE 46 155
 FT SITE 88 90
 FT BINDING 27 31
 FT BINDING 116 119
 FT STRAND 30 34
 FT TURN 35 38
 FT STRAND 39 43
 FT TURN 45 46
 FT STRAND 49 52
 FT TURN 55 56
 FT HELIX 58 60
 FT STRAND 62 68
 FT TURN 69 70
 FT STRAND 71 76
 FT TURN 77 80
 FT STRAND 81 85
 FT TURN 87 88
 FT STRAND 91 94
 FT HELIX 99 101
 FT STRAND 103 107
 FT TURN 109 110
 HEPARIN-BINDING GROWTH FACTOR 2.
 KIDNEY-DERIVED GROWTH FACTOR.
 CELL ATTACHMENT SITE (POTENTIAL).
 CELL ATTACHMENT SITE (POTENTIAL).
 HEPARIN (POTENTIAL).
 HEPARIN (POTENTIAL).

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FT STRAND 113 117
FT TURN 121 122
FT STRAND 124 124
FT STRAND 127 127
FT TURN 129 130
FT STRAND 133 133
FT TURN 136 138
FT HELIX 141 142
FT TURN 144 146
FT STRAND 148 151
SQ SEQUENCE 155 AA; 17250 MW; BE6CE70FA6107129 CRC64;

Query Match
Best Local Similarity 98.9%; Score 817; DB 1; Length 155;
Matches 153: Conservative 1; Mismatches 1; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGSGAFPFGHFKDKRLCKNGGFLLRHPDGRVDGVEKSDPHI 60
DB 1 KIQLQAEERGVYSIKGVCANRRLAKMEDGRLASKCVTDECFEERLESNNNTYRSRY 120
QY 61 KIQLQAEERGVYSIKGVCANRRLAKMEDGRLASKCVTDECFEERLESNNNTYRSRY 120
DB 61 KIQLQAEERGVYSIKGVCANRRLAKMEDGRLASKCVTDECFEERLESNNNTYRSRY 120
QY 121 TSMYVALKRTGQYKLGSKTGPCKALFLPMSAKS 155
DB 121 SSMYVALKRTGQYKLGPKTGPCKALFLPMSAKS 155

RESULT 3
FGF2_SHEEP STANDARD; PRT; 155 AA.
AC P20003;
DT 01-FEB-1996 (Rel. 17, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (BFGF) (Prostatropin).
GN FGF2 OR FGF-2.
OS Ovis aries (Sheep).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
OC Bovidae; Caprinae; Ovis.
OX NCBI_TaxID=9940;
RN [1]
RP SEQUENCE FROM N.A.
RA Sutton R., Ward W.G., Raphael K.A., Cam G.R.;
RL Submitted (SEP-1994) to the EMBL/GenBank/DBJ databases.
RN [2]
RP SEQUENCE OF 9-155.
RX MEDLINE=88055577; PubMed=3678486;
RA Simpson R.J., Moritz R.L., Lloyd C.J., Fabri L.J., Nice E.C.,
RA Rubira M.R., Burgess A.W.;
RT "Primary structure of ovine pituitary basic fibroblast growth
RT factor."
RL FEBS Lett. 224:128-132(1987).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL: L36136; AAA31519.1; -
DR PIR: S00185; S00185.
DR HSSP: P09038; 1BFF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILL_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; ILHBGF.
DR ProDom: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1
FT CHAIN 10 155
FT SITE 45 48 CELL ATTACHMENT SITE (POTENTIAL).
FT SITE 87 90 CELL ATTACHMENT SITE (POTENTIAL).
FT BINDING 27 31 HEPARIN (POTENTIAL).
FT BINDING 116 119 HEPARIN (POTENTIAL).
SQ SEQUENCE 155 AA; 17280 MW; B5F2364BA61060D CRC64;

Query Match
Best Local Similarity 98.2%; Score 811; DB 1; Length 155;
Matches 152: Conservative 1; Mismatches 2; Indels 0; Gaps 0;

QY 1 MAAGSITTLPALPEDGSGAFPFGHFKDKRLCKNGGFLLRHPDGRVDGVEKSDPHI 60
DB 1 MAAGSITTLPALPEDGSGAFPFGHFKDKRLCKNGGFLLRHPDGRVDGVEKSDPHI 60
QY 61 KIQLQAEERGVYSIKGVCANRRLAKMEDGRLASKCVTDECFEERLESNNNTYRSRY 120
DB 61 KIQLQAEERGVYSIKGVCANRRLAKMEDGRLASKCVTDECFEERLESNNNTYRSRY 120
QY 121 TSMYVALKRTGQYKLGSKTGPCKALFLPMSAKS 155
DB 121 SSMYVALKRTGQYKLGPKTGPCKALFLPMSAKS 155

RESULT 4
FGF2_RAT STANDARD; PRT; 154 AA.
AC P13109;
DT 01-JAN-1990 (Rel. 13, Created)
DT 01-JAN-1990 (Rel. 13, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (BFGF) (Prostatropin).
GN FGF2 OR FGF-2.
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX NCBI_TaxID=10116;
RN [1]
RP SEQUENCE FROM N.A.
RA STRAIN=SPRAGUE-DAWLEY; TISSUE=Ovary;
RX MEDLINE=88262516; PubMed=3387229;
RA Shimasaki S., Emoto N., Koba A., Mercado M., Shibata F.,
RA Cooksey K., Baird A., Ling N.;
RT "Complementary DNA cloning and sequencing of rat ovarian basic
RT fibroblast growth factor and tissue distribution study of its mRNA."
RL Biochem. Biophys. Res. Commun. 157:256-263(1988).
RN [2]
RP SEQUENCE FROM N.A.
RX TISSUE=Brain;
RX MEDLINE=88262516; PubMed=3387229;
RA Kurokawa T., Sano M., Igarashi K.;
RT "Nucleotide sequence of rat basic fibroblast growth factor cDNA."
RL Nucleic Acids Res. 16:5201-5201(1988).
RN [3]
RP SEQUENCE OF 1-28 FROM N.A.
RX STRAIN=SPRAGUE-DAWLEY; TISSUE=Testis;
RX MEDLINE=97200905; PubMed=9048734;
RA Pasumathil K.B.S., Jin Y., Cattini P.A.;
```


RT "Cloning of the rat fibroblast growth factor-2 promoter region and
RT its response to mitogenic stimuli in glioma C6 cells.";
RL J. Neurochem. 68:898-908(1997).
RN [4]
RP SEQUENCE OF 35-154 FROM N.A.
RC STRAIN-SPRAGUE-DAWLEY; TISSUE=Brain;
RA MEDLINE=92329546; PubMed=1378302;
RX El-Husseini A.E.D., Paterson J.A., Myal Y., Shiu R.P.C.;
RT "PCR detection of the rat brain basic fibroblast growth factor (bFGF)
RT mRNA containing a unique 3' untranslated region.";
RL Biochim. Biophys. Acta 1131:314-316(1992).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- TISSUE SPECIFICITY: FOUND IN ALL THE TISSUES EXAMINED.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC or send an email to license@sib-sib.ch).

DR EMBL; M22427; AAA41210.1; -;
DR EMBL; X07285; CA30265.1; -;
DR EMBL; U78079; AAC53225.1; -;
DR EMBL; X61697; CAA43863.1; -;
DR PIR; S00876; S00876.
DR PIR; A31674; A31674.
DR HSSP; P09038; 1BFF.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 1 9
FT CHAIN 10 154 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 26 30 HEPARIN (POTENTIAL).
FT BINDING 115 118 HEPARIN (POTENTIAL).
SQ SEQUENCE 154 AA; 17139 MW; 1A0F14F423D8403 CRC64;

Query Match 96.7%; Score 798.5; DB 1; Length 154;
Best Local Similarity 96.8%; Pred. No. 2e-76; 0; Indels 1; Gaps 1;
Matches 150; Conservative 4; Mismatches 0; Indels 1; Gaps 1;

QY 1 MAAGSITTLPALPEDGSGAAPPFGHFKDPKRLYCKNGGFFLRHPDGRVDGYREKSDPHI 60
DB 1 MAAGSITSLPALPEDG-CAFPFGHFKDPKRLYCKNGGFFLRHPDGRVDGYREKSDPHV 59
DB 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 154
QY 61 KIOLAERGVVSIKGVCANRYLAMKEDGRLLASKCVDCEFFERLESNNNTYRSRY 120
DB 60 KIOLAERGVVSIKGVCANRYLAMKEDGRLLASKCVDCEFFERLESNNNTYRSRY 119
QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
DB 120 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 154

RESULT 5
FGF2_MOUSE
ID_FGF2_MOUSE STANDARD; PRT; 154 AA.
AC P15655;
DT 01-APR-1990 (Rel. 14, Created)

DT 01-APR-1990 (Rel. 14, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast
DE growth factor) (bFGF) (Prostatropin).
GN FGF2 OR FGF-2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=90201563; PubMed=2318343;
RA Hebert J.M., Basillio C., Goldfarb M., Haub O., Martin G.R.;
RT "Isolation of cdnas encoding four mouse FGF family members and
RT characterization of their expression patterns during embryogenesis.";
RL Dev. Biol. 138:454-463(1990).
RN [2]
RP SEQUENCE FROM N.A.
RC STRAIN=C57BL/6J, A/J, AND MOD/LtJ; TISSUE=Spleen;
RA Ma R.Z., Teuscher C.;
RL Submitted (MAY-1998) to the EMBL/GenBank/DBJ databases.
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC or send an email to license@sib-sib.ch).

DR EMBL; M30644; AAA37621.1; -;
DR EMBL; AF065903; AAC17503.1; -;
DR EMBL; AF065904; AAC17504.1; -;
DR EMBL; AF065905; AAC17505.1; -;
DR PIR; C37360; C37360.
DR PIR; P09038; 1BFF.
DR HSSP; P09038; 1BFF.
DR MGD; MGI:95516; Fgf2.
DR InterPro; IPR002309; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 1 9
FT CHAIN 10 154 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 26 30 HEPARIN (POTENTIAL).
FT BINDING 115 118 HEPARIN (POTENTIAL).
SQ SEQUENCE 154 AA; 17153 MW; 689F677416274388 CRC64;

Query Match 94.9%; Score 783.5; DB 1; Length 154;
Best Local Similarity 94.8%; Pred. No. 7.2e-75;
Matches 147; Conservative 5; Mismatches 2; Indels 1; Gaps 1;

QY 1 MAAGSITTLPALPEDGSGAAPPFGHFKDPKRLYCKNGGFFLRHPDGRVDGYREKSDPHI 60
DB 1 MAAGSITSLPALPEDGGA-AFPFGHFKDPKRLYCKNGGFFLRHPDGRVDGYREKSDPHV 59
DB 61 KIOLAERGVVSIKGVCANRYLAMKEDGRLLASKCVDCEFFERLESNNNTYRSRY 120
QY 60 KIOLAERGVVSIKGVCANRYLAMKEDGRLLASKCVDCEFFERLESNNNTYRSRY 119
QY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155

Db 120 SSMYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 154

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RESULT 6
FCF2_MONDO
ID FCF2_MONDO STANDARD: PRT: 156 AA.
AC P48798;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (basic fibroblast
DE growth factor) (BFGF) (Prostatropin).
GN FGF2.
OS Monodelphis domestica (Short-tailed grey opossum).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Metatheria; Didelphimorphia; Didelphidae; Monodelphis.
OC NCBI_TaxID=13616;
OX NCBI_TaxID=13616;
RN [1]
RP SEQUENCE FROM N.A.
RC TISUE-EYE;
RX MEDLINE=94296558; PubMed=8024698;
RA Kusewitt D.F., Sabourin C.L.K., Sherburn T.E., Ley R.D.;
RT "Characterization of cDNA encoding basic fibroblast growth factor of
RT the marsupial Monodelphis domestica.";
RL DNA Cell Biol. 13:549-554(1994).
CC -I- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -I- SUBUNIT: MONOMER.
CC -I- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC CC
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CC -----
DR EMBL: Z15154; CAZ78854.1; ALT_INT.
DR HSSP: P09038; IBBF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILI_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; ILI_HBGF.
DR ProDom: PR000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT CHAIN 1 9 HEPARIN-BINDING GROWTH FACTOR 2.
FT PROPEP 1 9 BY SIMILARITY.
FT BINDING 10 156 HEPARIN (POTENTIAL).
FT BINDING 28 32 HEPARIN (POTENTIAL).
FT BINDING 117 120 HEPARIN (POTENTIAL).
FT BINDING 156 17303 MW; 76555FC49BFL209 CRC64;
SQ SEQUENCE
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Query Match 92.1%; Score 760.5; DB 1; Length 156;
Best Local Similarity 92.1%; Pred. No. 1.9e-72;
Matches 145; Conservative 5; Mismatches 5; Indels 1; Gaps 1;

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QY 1 MAAGSTITLPALEDP-GSGSAPPGHFKDPKRLCKNGGFLLRHPDGRVDGVREKSDPH 59
DB 1 MAAGSTITLPALEDPGGCGGCGGAPPGHFKDPKRLCKNGGFLLRHPDGRVDGIRESDPN 60
QY 60 ILLQQLAEEGRGVVSIKGVCANRYLAMKEDGRLASKCVTDECFEERLESNNYTYRSRK 119
DB 61 ILLQQLAEEGRGVVSIKGVCANRYLAMKEDGRLALKYVTECFEERLESNNYTYRSRK 120
QY 120 YTSWYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 155
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Db 121 SSMYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 156

```
RESULT 7
FCF2_CHICK
ID FCF2_CHICK STANDARD: PRT: 158 AA.
AC P48800;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (basic fibroblast
DE growth factor) (BFGF).
GN FGF2 OR FGF-2.
OS Gallus gallus (Chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OX NCBI_TaxID=9031;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=93246053; PubMed=7683281;
RA Bojia A.Z., Zeller R., Meijers C.;
RT "Expression of alternatively spliced bfgf first coding exons and
RT antisense mRNAs during chicken embryogenesis.";
RL Dev. Biol. 157:110-118(1993).
CC -I- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -I- SUBUNIT: MONOMER.
CC -I- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES
CC AFGF.
CC -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC CC
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CC use by non-profit institutions as long as its content is in no way
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CC or send an email to license@isb-sib.ch).
CC -----
DR EMBL: M95707; AAA48617.1; -.
DR HSSP: P09038; IBBF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILI_HBGF.
DR Pfam: PF00167; FGF_1.
DR PRINTS: PR00262; ILI_HBGF.
DR ProDom: PR000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF_1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT CHAIN 1 12 HEPARIN-BINDING GROWTH FACTOR 2.
FT PROPEP 1 12 BY SIMILARITY.
FT BINDING 13 158 HEPARIN (POTENTIAL).
FT BINDING 30 34 HEPARIN (POTENTIAL).
FT BINDING 119 122 HEPARIN (POTENTIAL).
FT BINDING 158 17374 MW; 7B69B864C17FL816 CRC64;
SQ SEQUENCE
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Query Match 91.9%; Score 759; DB 1; Length 158;
Best Local Similarity 92.2%; Pred. No. 2.7e-72;
Matches 142; Conservative 5; Mismatches 7; Indels 0; Gaps 0;

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QY 2 AAGSTITLPALEDDGSGAFPPGHFKDPKRLCKNGGFLLRHPDGRVDGVREKSDPHX 61
DB 5 AAGSTITLPALEDDGSGAFPPGHFKDPKRLCKNGGFLLRHPDGRVDGVREKSDPHX 64
QY 62 LQLQAEERGVVSIKGVCANRYLAMKEDGRLASKCVTDECFEERLESNNYTYRSRYT 121
DB 65 LQLQAEERGVVSIKGVCANRYLAMKEDGRLALKGATECFEERLESNNYTYRSRYT 124
QY 122 SSMYVALKRTGQYKLGSKTGPQKAILFLPMSAKS 155
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Db 125 DMVVALKRTGQYKPGPKTGPGOKAILFLPMSAKS 158

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|||||
RESULT 8
FGF2_RABIT STANDARD; PRT; 137 AA.
ID FGF2_RABIT
AC P48799;
DT 01-FEB-1996 (Rel. 33, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 (HBGF-2) (Basic fibroblast growth factor) (BFGF) (Prostatropin) (Fragment).
GN FGF2.
OS Oryctolagus cuniculus (Rabbit).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
OX NCBI_TaxID=9986;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=NEW ZEALAND WHITE; TISSUE=Smooth muscle;
RX MEDLINE=9343209; Pubmed=8342599;
RA Winkles J.A., Friesel R., Alberts G.F., Janat M.F., Lian G.;
RT "Elevated expression of basic fibroblast growth factor in an immortalized rabbit smooth muscle cell line.";
RL Am. J. Pathol. 143:518-527(1993).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN MORE STRONGLY THAN DOES AFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC EMBL; J12034; AAA31248.1; -.
DR HSSP; P09038; 1BFF.
DR InterPro; IPR002209; HBGF_FGF.
DR Pfam; PF00167; FGF; 1.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT BINDING 18 22 HEPARIN (POTENTIAL).
FT BINDING 107 110 HEPARIN (POTENTIAL).
FT NON_TER 137
SQ SEQUENCE 137 AA; 15418 MW; 0D9EE457B8BE8C51 CRC64;
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Query Match 89.38; Score 738; DB 1; Length 137;
Best Local Similarity 99.38; Pred. No. 3.6e-70;
Matches 136; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

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QY 10 PALPEDGSGAAPPFGHFKDPKRLCKNGGFLRLIHPDGRVGVREKSDPHIKLOLQAEER 69
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Db 1 PALPEDGSGAAPPFGHFKDPKRLCKNGGFLRLIHPDGRVGVREKSDPHIKLOLQAEER 60
   |||||||
QY 70 GVVSIGVCANRYLAMKEDGRLLASKCVTDCEFFERLESNNYTRSKRYTSWVALKR 129
   |||||||
Db 61 GVVSIGVCANRYLAMKEDGRLLASKCVTDCEFFERLESNNYTRSKRYTSWVALKR 120
   |||||||
QY 130 TGOYKLSKTPGOKAI 146
   |||||||
Db 121 TGOYKLSKTPGOKAI 137
   |||||||
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RESULT 9
FGF2_XENLA STANDARD; PRT; 155 AA.
ID FGF2_XENLA
AC P12226;
DT 01-OCT-1989 (Rel. 12, Created)
DT 01-JAN-1990 (Rel. 13, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 2 precursor (HBGF-2) (Basic fibroblast growth factor) (BFGF).
GN FGF2 OR FGF-2.
OS Xenopus laevis (African clawed frog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; OC Amphibia; Batrachia; Anura; Mesobatrachia; Pipoidae; Pipidae; OC Xenoipodinae; Xenopus.
OX NCBI_TaxID=8355;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=89058621; Pubmed=3194757;
RA Kimmelman D., Abraham J., Haaparanta T., Palisi T., Kirschner M.;
RT "The presence of fibroblast growth factor in the frog egg: its role as a natural mesoderm inducer.";
RL Science 242:1053-1056(1988).
RN [2]
RP SEQUENCE OF 95-155 FROM N.A.
RX MEDLINE=88052890; Pubmed=3479265;
RA Kimmelman D., Kirschner M.;
RT "Synergistic induction of mesoderm by FGF and TGF-beta and the identification of an mRNA coding for FGF in the early Xenopus embryo.";
RL Cell 51:869-877(1987).
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC EMBL; M18067; AAA49726.1; -.
DR PIR; A29618; A29618.
DR PIR; A40117; A40117.
DR HSSP; P09038; 1BFF.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
FT PROPEP 1 9
FT CHAIN 10 155 HEPARIN-BINDING GROWTH FACTOR 2.
FT BINDING 27 31 HEPARIN (POTENTIAL).
FT BINDING 116 119 HEPARIN (POTENTIAL).
FT CONFLICT 111 111 MISSING (IN REF. 2).
SQ SEQUENCE 155 AA; 17241 MW; 036735C8063142FD CRC64;
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Query Match 83.28; Score 687; DB 1; Length 155;
Best Local Similarity 83.98; Pred. No. 8.8e-65;
Matches 130; Conservative 9; Mismatches 16; Indels 0; Gaps 0;

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QY 1 MAASITLPLALPEDGSGAAPPFGHFKDPKRLCKNGGFLRLIHPDGRVGVREKSDPHI 60
   |||||||
Db 1 MAASITLPLALPEDGSGAAPPFGHFKDPKRLCKNGGFLRLIHPDGRVGVREKSDPHI 60
   |||||||
QY 61 KLOLQAEERGVAISTKGVCANRYLAMKEDGRLLASKCVTDCEFFERLESNNYTRSKRY 120
   |||||||
Db 61 KLOLQAEERGVAISTKGVCANRYLAMKEDGRLLASKCVTDCEFFERLESNNYTRSKRY 120
   |||||||
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OY 121 TSWYVALKRTGOYKXSGTGPQKAILFLPMSANS 155
      :|||||
Db 121 SSMYVALKRTGOYKXSGTGPQKAILFLPMSAKS 155

RESULT 10
FGFI_MESAU STANDARD; PRT; 155 AA.
ID FGFI_MESAU
AC P34004;
DT 01-FEB-1994 (Rel. 28, Created)
DT 01-FEB-1994 (Rel. 28, Last sequence update)
DE 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
  growth factor) (AFGF).
DE FGFI OR FGF-1.
OS Mesocricetus auratus (Golden hamster).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Cricetinae;
OC Mesocricetus.
OX NCBI_TaxID=10036;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=90270291; PubMed=1693366;
RA Hall J.A., Harris M.A., Malark M., Mansson P.E., Zhou H., Harris S.E.;
RT "Characterization of the hamster DDT-1 cell afGF/HGF-I gene and cDNA
  and its modulation by steroids."
RL J. Cell. Biochem. 43:17-26(1990).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
  IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
  VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
  CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
  THAN DOES BFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
PIR: A60721; A60721.
DR HSSP; P05230; 1RML.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 15
FT CHAIN 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
FT BINDING 24 28 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
FT SEQUENCE 155 AA; 17403 MW; 41E5EC760E412CC5 CRC64;
SO QUERY MATCH
Best local similarity 50.7%; Score 418.5; DB 1; Length 155;
Matches 86; Conservative 16; Mismatches 50; Indels 5; Gaps 2;
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DT 01-FEB-1991 (Rel. 17, Created)
DT 01-FEB-1996 (Rel. 33, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
  growth factor) (AFGF) (Alpha-endothelial cell growth factor).
DE FGFI OR FGF-1.
OS Gallus gallus (chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OX NCBI_TaxID=9031;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=91347925; PubMed=1715259;
RA Schnurch H., Risau W.;
RT "Differentiating and mature neurons express the acidic fibroblast
  growth factor gene during chick neural development."
RL Development 111:1143-1154(1991).
RN [2]
RP SEQUENCE FROM N.A.
RA Martin G.R., Han J.K.;
RL submitted (JUL-1995) to the EMBL/GenBank/DBJ databases.
RN [3]
RP SEQUENCE OF 22-48.
RX MEDLINE=88296438; PubMed=3402441;
RA Risau W., Gautschi-Sova P., Boehlen P.;
RT "Endothelial cell growth factors in embryonic and adult chick brain
  are related to human acidic fibroblast growth factor."
RL EMO J. 7:959-962(1989).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
  IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
  VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
  CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
  THAN DOES BFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL; S63263; AAB19629.1; -.
DR EMBL; U31863; AAA80310.1; -.
DR EMBL; S63261; AAD13942.1; -.
DR PIR; S02639; S02639.
DR HSSP; P05230; 2AXM.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
DR Growth factor; Mitogen; Angiogenesis; Heparin-binding.
KW PROPEP 15
FT CHAIN 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
FT BINDING 22 155 ENDOTHELIAL CELL GROWTH FACTOR ALPHA.
FT BINDING 24 28 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
FT SEQUENCE 155 AA; 17322 MW; 8EDB70545E2B4365 CRC64;
SO QUERY MATCH
Best local similarity 49.7%; Score 410.5; DB 1; Length 155;
Matches 84; Conservative 20; Mismatches 44; Indels 5; Gaps 2;
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RX MEDLINE-98387896; PubMed-9719643;
RA Lozano R.M., Jimenez M., Santoro J., Rico M., Gimenez-Gallego G.;
RT "Solution structure of acidic fibroblast growth factor bound to 1,3,
RT 6-naphthalenesulfonate: a minimal model for the anti-tumoral
RT action of suramin and suradistas.";
RL J. Mol. Biol. 281:899-915(1998).
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES bFGF.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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DR EMBL; M13361; AAA79245.1; -
DR EMBL; X51943; CA36206.1; -
DR EMBL; X51943; CA36206.1; -
DR EMBL; M30490; AAA52446.1; JOINED.
DR EMBL; M30491; AAA52446.1; JOINED.
DR EMBL; M60515; AAA51672.1; -
DR EMBL; M60516; AAA51673.1; -
DR EMBL; M23087; AAA52638.1; -
DR EMBL; M23086; AAA52638.1; JOINED.
DR EMBL; S67291; AAB29057.2; -
DR EMBL; X65778; CAA46661.1; -
DR PIR; A23553; A23553.
DR PIR; A24243; A24243.
DR PIR; A24301; A24301.
DR PIR; A24662; A24662.
DR PIR; A24820; A24820.
DR PIR; A26386; A26386.
DR PIR; A26365; A26365.
DR PIR; S18217; S18217.
DR PDB; 2AFG; 1S-OCT-95.
DR PDB; 1AXM; 22-APR-98.
DR PDB; 2AXM; 22-APR-98.
DR PDB; 1RML; 11-NOV-98.
DR MIM; 131220; -
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; ILL_HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding; Acetylation;
KW 3D-structure.
FT PROPEP 1 15
FT CHAIN 16 155 HEPARIN-BINDING GROWTH FACTOR 1.
FT MOD_RES 2 2 ACETYLATION.
FT BINDING 24 28 HEPARIN (POTENTIAL).
FT BINDING 113 116 HEPARIN (POTENTIAL).
SQ SEQUENCE 155 AA; 17460 MW; F586E8BF09F1580 CRC64;

Query Match 49.6%; Score 409.5; DB 1; Length 155;
Best Local Similarity 54.1%; Pred. No. 8.7e-36;
Matches 85; Conservative 16; Mismatches 51; Indels 5; Gaps 2;

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DB 58 QDLSAEVGEVYIKSTETGTLADTDGLLYGSGTPNEBCLFLERLENNHNTYISKH 117
OY 121 T--SWYVALKRTGYKLGSKTGPCGKALFLPMASKS 155
DB 118 AEKNWFVGLKKNKSGCKRGRPRHYGOKALFLPLPVS 154

RESULT 13
FGF1_MOUSE
ID FGF1_MOUSE STANDARD; PRT; 155 AA.
AC P10935;
DT 01-JUL-1989 (Rel. 11, Created)
DT 01-JUL-1989 (Rel. 11, Last sequence update)
DT 01-MAR-2002 (Rel. 41, Last annotation update)
DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast
DE growth factor) (AFGF).
GN FGF1 OR FGF-1 OR FGFA.
OS Mus musculus (Mouse), and
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Mus.
OX NCBI_Taxid=10090, 10116;
RN [1]
RP SEQUENCE FROM N.A.
RC SPECIES=Rat;
RX MEDLINE=89240051; PubMed=2470029;
RA Goodrich S., Yan G.C., Bahnenburg K., Mansson P.E.;
RT "The nucleotide sequence of rat heparin binding growth factor 1
RT (HBGF-1).";
RL Nucleic Acids Res. 17:2867-2867(1989).
RN [2]
RP SEQUENCE FROM N.A.
RC SPECIES=Mouse;
RX MEDLINE=90201563; PubMed=2318343;
RA Hebert J.M., Basilico C., Goldfarb M., Haub O., Martin G.R.;
RT "Isolation of cDNAs encoding four mouse FGF family members and
RT characterization of their expression patterns during embryogenesis.";
RL Dev. Biol. 138:454-463(1990).
RN [3]
RP SEQUENCE FROM N.A.
RC SPECIES=Mouse;
RX MEDLINE=97128312; PubMed=8972905;
RA Madral F., Hackshaw K.V., Chiu I.M.;
RT "Cloning and characterization of the mouse Fgf-1 gene.";
RL Gene 179:231-236(1996).
RN [4]
RP SEQUENCE FROM N.A.
RC SPECIES=Mouse; STRAIN=BALB/C;
RX MEDLINE=97094746; PubMed=8939980;
RA Alam K.Y., Frosthalm A., Hackshaw K.V., Evans J.E., Rotter A.,
RA Chiu I.M.;
RT "Characterization of the 18 promoter of fibroblast growth factor 1
RT and its expression in the adult and developing mouse brain.";
RL J. Biol. Chem. 271:30263-30271(1996)
CC -1- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
CC -1- SUBUNIT: MONOMER.
CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
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CC -----
DR EMBL; X14232; CAA32448.1; -
DR EMBL; M30641; AAA37618.1; -
DR EMBL; U36459; AAC52969.1; -

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DR EMBL: U36457; AAC52969.1; JOINED.
 DR EMBL: U67610; AAC52969.1; JOINED.
 DR PIR: S04147; S04147.
 DR PIR: D37360; D37360.
 DR HSP: P05230; 1RML.
 DR MGD: M61:95515; Fgf1.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; ILL_HBGF.
 DR Pfam: PF00167; FGF; 1.
 DR PRINTS: PR00262; ILLHBGF.
 DR ProDom: PD00831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
 FT PROPEP 1 15
 FT CHAIN 16 155
 FT BINDING 24 28
 FT BINDING 113 116
 SQ SEQUENCE 155 AA; 17418 MW; 8880E4FF0FBAA161 CRC64;

Query Match 49.0%; Score 404.5; DB 1; Length 155;
 Best Local Similarity 53.5%; Pred. No. 2.9e-35;
 Matches 84; Conservative 17; Mismatches 51; Indels 5; Gaps 2;

OY 1 MAAGSTTTPALPEDGSGAFPFGHFKDPKRLYCKNGGFRLRHPDGRVGRKSDPHI 60
 DB 1 MAGEGTTTALTALTEKN---LPLGNKKRKLKLYCSNGGHEFLRLIPGYVDGTRDSQHI 57
 OY 61 KLQLAERGVVSIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRY 120
 DB 58 QQLSAESVGEVYIKSTENGQYIAMDTSGLYGSQTPSECLFLELENHNTYTSKHH 117
 OY 121 T--SWYVALKRTGQYKLGSKTGPQKALIFLPM 155
 DB 118 AEKNMFVGLKNGSKCRGPRTHYGOKALIFLPLVSS 154

RESULT 14
 FGF1_PIG STANDARD: PRT; 152 AA.
 AC P20002;
 DT 01-FEB-1991 (Rel. 17, Created)
 DT 01-FEB-1996 (Rel. 33, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast growth factor) (AFGF) (Alpha-endothelial cell growth factor) (Fragment).
 GN FGF1 OR FGF-1.
 OS Sus scrofa (Pig).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Suina; Suidae; Sus.
 OX NCBI_TaxID=9823;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE=Heart;
 RX MEDLINE=92062117; PubMed=1719973;
 RA Schmidt M., Sharma H.S., Schott R.J., Schaper W.;
 RT "Amplification and sequencing of mRNA encoding acidic fibroblast growth factor (afgf) from porcine heart."
 RL Biochem. Biophys. Res. Commun. 180:853-859(1991).
 RN [2]
 RP SEQUENCE OF 22-41.
 RX MEDLINE=892331704; PubMed=2714282;
 RA Ounkler W., Maasberg M., Bernotat-Danielowski S., Luethe N.,
 RT "Isolation of heparin-binding growth factors from bovine, porcine and canine hearts."
 RL Eur. J. Biochem. 181:67-73(1989).
 CC -I- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND

CC CONCENTRATION OF THESE 2 GROWTH FACTORS.
 CC -I- SUBUNIT: MONOMER.
 CC -I- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY THAN DOES BFGF.
 CC -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 CC -----
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 CC -----
 DR EMBL: X60317; CAA42869.1; -.
 DR PIR: S03954; S03954.
 DR HSP: P05230; 2AXM.
 DR InterPro: IPR002209; HBGF_FGF.
 DR Pfam: PF00167; FGF; 1.
 DR ProDom: PD00831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.
 KW Growth factor; Mitogen; Angiogenesis; Heparin-binding.
 FT PROPEP 1 15
 FT CHAIN 16 >152
 FT BINDING 22 >152
 FT BINDING 24 28
 FT BINDING 113 116
 FT CONFLICT 31 31
 FT CONFLICT 39 39
 FT NON_TER 152
 SQ SEQUENCE 152 AA; 17103 MW; AE853B0A92F9ABF4 CRC64;

Query Match 48.8%; Score 403.5; DB 1; Length 152;
 Best Local Similarity 54.2%; Pred. No. 3.6e-35;
 Matches 83; Conservative 17; Mismatches 48; Indels 5; Gaps 2;

OY 1 MAAGSTTTPALPEDGSGAFPFGHFKDPKRLYCKNGGFRLRHPDGRVGRKSDPHI 60
 DB 1 MAGEGTTTALTALTEKN---LPLGNKKRKLKLYCSNGGHEFLRLIPGYVDGTRDSQHI 57
 OY 61 KLQLAERGVVSIKGCANRYLAMKEDGRLASKCVTDECFEERLESNNNTYRSRY 120
 DB 58 QQLSAESVGEVYIKSTENGQYIAMDTSGLYGSQTPSECLFLELENHNTYTSKHH 117
 OY 121 T--SWYVALKRTGQYKLGSKTGPQKALIFLPM 151
 DB 118 AEKNMFVGLKNGSKCRGPRTHYGOKALIFLPL 150

RESULT 15
 FGF1_BOVIN STANDARD: PRT; 155 AA.
 AC P03968;
 DT 23-OCT-1986 (Rel. 02, Created)
 DT 01-MAR-1989 (Rel. 10, Last sequence update)
 DT 01-MAR-2002 (Rel. 41, Last annotation update)
 DE Heparin-binding growth factor 1 precursor (HBGF-1) (Acidic fibroblast growth factor) (AFGF) (Prostaticin) (Endothelial cell growth factor beta and alpha chains) (Acidic eye-derived growth factor II) (EDGF II).
 GN FGF1 OR FGF-1 OR FGFA OR HBGF-1 OR AFGF.
 OS Bos taurus (Bovine).
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae; Bovidae; Bovinae; Bos.
 OX NCBI_TaxID=9913;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE=Retina;
 RX MEDLINE=89083506; PubMed=3205724;
 RA Halley C., Courtols Y., Laurent M.;

RT "Nucleotide sequence of bovine acidic fibroblast growth factor cDNA.";
RL Nucleic Acids Res. 16:10913-10913(1988).
RN [2]
RP SEQUENCE FROM N.A.
RC TISSUE=Retina;
RX MEDLINE=89078619; PubMed=2849564;
RA Alterio J., Halley C., Brou C., Soussi T., Courtois Y., Laurent M.;
RT "Characterization of a bovine acidic FGF cDNA clone and its
RT expression in brain and retina.";
RL FEBS Lett. 242:41-46(1988).
RN [3]
RP SEQUENCE OF 2-155.
RX MEDLINE=87016918; PubMed=3532107;
RA Burgess W.H., Mehlman T., Marshak D.R., Fraser B.A., Maciag T.;
RT "Structural evidence that endothelial cell growth factor beta is the
RT precursor of both endothelial cell growth factor alpha and acidic
RT fibroblast growth factor.";
RL Proc. Natl. Acad. Sci. U.S.A. 83:7216-7220(1986).
RN [4]
RP SEQUENCE OF 2-155.
RX MEDLINE=87026586; PubMed=3768327;
RA Crabb J.W., Ames L.G., Carr S.A., Johnson C.M., Roberts G.D.,
RT "Complete primary structure of prostatin, a prostate epithelial
RT cell growth factor.";
RL Biochemistry 25:4988-4993(1986).
RN [5]
RP SEQUENCE OF 16-155.
RX MEDLINE=86070224; PubMed=4071057;
RA Gimenez-Gallego G., Rodkey J., Bennett C., Rios-Candelore M.,
RA Disalvo J., Thomas K.;
RT "Brain-derived acidic fibroblast growth factor: complete amino acid
RT sequence and homologues.";
RL Science 230:1385-1388(1985).
RN [6]
RP SEQUENCE OF 16-44, AND COMPOSITION.
RX MEDLINE=86055750; PubMed=4065099;
RA Boehlen P., Esch F., Balrd A., Gospodarowicz D.;
RT "Acidic fibroblast growth factor (FGF) from bovine brain:
RT amino-terminal sequence and comparison with basic FGF.";
RL EMBO J. 4:1951-1956(1985).
RN [7]
RP SEQUENCE OF 16-56 FROM N.A.
RX MEDLINE=86261806; PubMed=2425435;
RA Abraham J.A., Merz A., Whang J.L., Tumolo A., Friedman J.,
RA Hjerild K.A., Gospodarowicz D., Fiddes J.C.;
RT "Nucleotide sequence of a bovine clone encoding the angiogenic
RT protein, basic fibroblast growth factor.";
RL Science 233:545-548(1986).
RN [8]
RP SEQUENCE OF 16-45.
RX MEDLINE=89231704; PubMed=2714282;
RA Quinkler W., Maasberg M., Bernotat-Danielowski S., Luethe N.,
RA Sharma H.S., Schaper W.;
RT "Isolation of heparin-binding growth factors from bovine, porcine and
RT canine hearts.";
RL Eur. J. Biochem. 181:67-73(1989).
RN [9]
RP SEQUENCE OF 1-18 FROM N.A.
RX Philippe J.M., Renaud F., Desset S., Laurent M.;
RL Submitted (JUL-1992) to the EMBL/Genbank/DBJ databases.
RN [10]
RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).
RX MEDLINE=91095983; PubMed=1702556;
RA Zhu X., Komiya H., Chirino A., Faham S., Fox G.M., Arakawa T.,
RA Hsu B.T., Rees D.C.;
RT "Three-dimensional structures of acidic and basic fibroblast growth
RT factors.";
RL Science 251:90-93(1991).
CC -!- FUNCTION: THE HEPARIN-BINDING GROWTH FACTORS ARE ANGIOGENIC AGENTS
CC IN VIVO AND ARE POTENT MITOGENS FOR A VARIETY OF CELL TYPES IN
CC VITRO. THERE ARE DIFFERENCES IN THE TISSUE DISTRIBUTION AND
CC CONCENTRATION OF THESE 2 GROWTH FACTORS.

CC -!- SUBUNIT: MONOMER.
CC -!- MISCELLANEOUS: THIS PROTEIN BINDS HEPARIN, ALTHOUGH LESS STRONGLY
CC THAN DOES bFGF.
CC -!- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
CC -----
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CC or send an email to license@isb.ch).
CC -----
DR EMBL: M13439; AAA30516.1; -
DR EMBL: X13221; CAA31610.1; -
DR EMBL: X14032; CAA32192.1; -
DR EMBL: M35608; AAA30517.1; -
DR EMBL: X66446; CAA47063.1; -
DR EMBL: M97660; AAA30563.1; -
DR EMBL: M97661; AAA30564.1; -
DR PIR: A01385; GKBOA.
DR PIR: A25043; A25043.
DR PIR: B25043; B25043.
DR PIR: C25043; C25043.
DR PIR: A24477; A24477.
DR PIR: B24663; B24663.
DR PIR: S02102; S02102.
DR PDB: 1BAR; 31-OCT-93.
DR PDB: 1AFC; 31-OCT-93.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILL_HBGF.
DR Pfam: PF00167; FGF; 1.
DR PRINTS: PR00262; ILLHBGF.
DR ProDom: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Angiogenesis; Heparin-binding; Acetylation;
KW 3D-structure.
FT PROPEP 1 15
FT CHAIN 2 155
FT CHAIN 16 155
FT CHAIN 22 155
FT MOD_RES 2 2
FT BINDING 24 28
FT STRAND 113 116
FT STRAND 27 31
FT STRAND 32 34
FT STRAND 37 40
FT STRAND 42 43
FT STRAND 46 49
FT STRAND 55 57
FT HELIX 59 61
FT STRAND 69 69
FT STRAND 71 73
FT STRAND 79 82
FT TURN 84 85
FT TURN 91 91
FT STRAND 96 98
FT HELIX 100 100
FT STRAND 103 104
FT TURN 106 107
FT STRAND 110 111
FT STRAND 113 114
FT STRAND 116 121
FT STRAND 123 123
FT STRAND 126 126
FT STRAND 128 129
FT TURN 132 132
FT STRAND 134 134
FT HELIX 135 137
FT TURN 140 141
FT TURN 144 145
FT STRAND 147 150
BRANCHES:
1. ENDOTHELIAL CELL GROWTH FACTOR BETA.
2. HEPARIN-BINDING GROWTH FACTOR 1.
3. ENDOTHELIAL CELL GROWTH FACTOR ALPHA.
4. ACETYLATION.
5. HEPARIN (POTENTIAL).
6. HEPARIN (POTENTIAL).

SO SEQUENCE 155 AA; 17493 MW; F636641F189F9BED CRC64;

Query Match 47.6%; Score 393.5; DB 1; Length 155;

Best Local Similarity 52.2%; Pred. No. 4.1e-34; Mismatches 82; Conservative 19; Matches 51; Indels 5; Gaps 2;

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OY 1 MAAGSITTLPALPEDGSGAPPGHFKDPKRLCYKNGGFLLRIHPDGRVGVREKSDPHI 60
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 1 MABETTTFALTIEKEN--LPLGNKKPKLLYCSNGGFLLRIHPDGRVGVREKSDPHI 57
    :||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
OY 61 KLOLQAEERGVVSIKGCANRYLANKEDGRLASKCVTDECFFPERLESNNNTYRSRKY 120
    :||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 58 QLOLCAESIGEVYIKSTETGQFLAMDTDGLYGSQTPNEECLEFLERLENNHYNTYISKKH 117
    :||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
OY 121 TS--WYVALKRTGQYKLGSKTGPQOKATLFLPMSAKS 155
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
Db 118 AEKHMFVGLKKNRSGKSLGPRTHGOKATLFLPLPVSS 154
    ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
```

Search completed: June 7, 2002, 14:46:43
Job time: 614 sec

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GenCore version 4.5
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OM protein - protein search, using sw model

Run on: June 7, 2002, 14:46:13 ; Search time 78.17 seconds
(without alignments)
343.024 Million cell updates/sec

Title: US-09-802-365-8

Perfect score: 826
Sequence: 1 MAAGSITTLPALPEDGGSGA.....GSKTGPQKALFLPMSAKS 155

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 562222 seqs, 172994929 residues

Total number of hits satisfying chosen parameters: 562222

Minimum DB seq length: 0

Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%

Maximum Match 100%
Listing first 45 summaries

Database :

SPTREMBL_19:*

- 1: sp_archaea:*
- 2: sp_bacteria:*
- 3: sp_fungi:*
- 4: sp_human:*
- 5: sp_invertebrate:*
- 6: sp_mammal:*
- 7: sp_mmc:*
- 8: sp_organelle:*
- 9: sp-phage:*
- 10: sp-plant:*
- 11: sp-rodent:*
- 12: sp-virus:*
- 13: sp-vertebrate:*
- 14: sp-unclassified:*
- 15: sp_rvirus:*
- 16: sp_bacteriaph:*
- 17: sp_archaeap:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	826	100.0	196	4 P78443	P78443 mus sapien
2	768	93.0	153	11 Q925A3	Q925A3 mus musculu
3	742	89.8	170	11 Q604B7	Q604B7 cavia porce
4	704	85.2	155	13 Q90Y92	Q90Y92 cynops pyrr
5	682	82.6	130	6 O77767	O77767 canis famli
6	585	70.8	111	6 Q9BDX1	Q9BDX1 macaca mula
7	567	68.6	125	13 Q98TD8	Q98TD8 cynops pyrr
8	561	67.9	108	6 Q9N1S7	Q9N1S7 capreolus c
9	490	59.3	109	11 Q925A1	Q925A1 mus musculu
10	486	58.8	112	11 Q925A2	Q925A2 mus musculu
11	476	57.6	101	13 P79706	P79706 cynops pyrr
12	469.5	56.8	146	13 Q07659	Q07659 gallus gall
13	341	41.3	76	6 Q9NOV2	Q9NOV2 ovis aries
14	328	39.7	114	4 Q00527	Q00527 homo sapien
15	328	39.7	114	4 Q16443	Q16443 homo sapien
16	292	35.4	106	6 Q9N1S8	Q9N1S8 capreolus c

17	249	30.1	196	13 Q9YH31	Q9YH31 notophthalm
18	245	29.7	124	13 Q90XQ5	Q90XQ5 ambystoma m
19	229	27.7	206	13 Q9YGD8	Q9YGD8 oncorhynch m
20	224	27.1	111	13 Q90XO1	Q90XO1 ambystoma m
21	216	26.2	208	6 Q9SL12	Q9SL12 sus scrofa
22	213	25.8	191	13 Q9DFC9	Q9DFC9 brachydanio
23	208	25.2	208	13 Q9PYV1	Q9PYV1 xenopus lae
24	208	25.2	212	11 Q9ESL8	Q9ESL8 mus musculu
25	205.5	24.9	207	11 Q9ERS8	Q9ERS8 mus musculu
26	205.5	24.9	207	11 Q9ERS5	Q9ERS5 mus musculu
27	204	24.7	212	11 Q9EST9	Q9EST9 rattus norv
28	203	24.6	208	6 Q9SK97	Q9SK97 macaca fasc
29	202.5	24.5	212	13 Q42407	Q42407 gallus gall
30	195.5	23.7	134	13 Q90XQ3	Q90XQ3 ambystoma m
31	194.5	23.5	213	6 Q9N1B9	Q9N1B9 ovis aries
32	193	23.4	208	4 Q96P59	Q96P59 homo sapien
33	191.5	22.2	186	6 Q9SL47	Q9SL47 mustela vis
34	189.5	22.9	237	13 Q9IAI6	Q9IAI6 gallus gall
35	189	22.9	112	13 Q90XP9	Q90XP9 ambystoma m
36	188.5	22.8	252	11 Q89096	Q89096 rattus norv
37	188.5	22.8	253	13 Q9IAI5	Q9IAI5 gallus gall
38	185.5	22.5	185	11 Q9ERN5	Q9ERN5 rattus norv
39	183.5	22.2	59	4 Q9UBK1	Q9UBK1 homo sapien
40	180.5	21.9	181	11 Q924B4	Q924B4 rattus norv
41	179.5	21.7	127	4 Q99517	Q99517 homo sapien
42	178.5	21.6	302	11 Q9CSX5	Q9CSX5 mus musculu
43	175.5	21.2	199	13 Q9IAI3	Q9IAI3 gallus gall
44	174.5	21.1	59	4 Q16089	Q16089 homo sapien
45	174.5	21.1	60	4 Q16588	Q16588 homo sapien

ALIGNMENTS

RESULT 1

ID P78443 PRELIMINARY; PRT; 196 AA.

AC P78443;

DT 01-MAY-1997 (TREMBLrel. 03, Created)

DT 01-MAY-1997 (TREMBLrel. 03, Last sequence update)

DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)

DE 21 KDA BASIC FIBROBLAST GROWTH FACTOR (BFGF).

GN FGF2.

OS Homo sapiens (Human).

OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

NCBI_TaxID=9606;

RM [1]

RP SEQUENCE FROM N.A.

RA MEDLINE=89184522; PubMed=2538817;

RA Prats H., Kaghad M., Prats A.C., Klagsbrun M., Lelias J.M., lianzun P., Chalon P., Tauber J.P., Amelric F., Smith J.A., Caput D.;

RT "High molecular mass forms of basic fibroblast growth factor are initiated by alternative CUG codons.";

RT Proc. Natl. Acad. Sci. U.S.A. 86:1836-1840(1989).

RM [2]

RP SEQUENCE OF 81-168 FROM N.A.

RA MEDLINE=93038590; PubMed=14117798;

RA Watson R., Anthony F., Pickett M., Lambden P., Masson G.M., Thomas E.J.;

RT "Reverse transcription with nested polymerase chain reaction shows expression of basic fibroblast growth factor transcripts in human granulosa and cumulus cells from in vitro fertilisation patients.";

RT Biochem. Biophys. Res. Commun. 187:1227-1231(1992).

DR EMBL; J04513; AAA52532.1; -.

DR EMBL; S47380; AADI3853.1; -.

DR HSSP; P09038; IBEF.

DR InterPro; IPR002209; HBGF_FGF.

DR InterPro; IPR002348; IIL_HBGF.

DR Pfam; PF00167; FGF; 1.

DR PRINTS; PR00262; IILHBGF.

DR PRODOM; PD000831; HBGF_FGF; 1.

DR SMART; SM00442; FGF; 1.

DR PROSITE: PS00247; HBGF_FGF; 1.
SQ SEQUENCE 196 AA; 21203 MW; DB5447137E60343 CRC64;

Query Match 100.0%; Score 826; DB 4; Length 196;
Best Local Similarity 100.0%; Pred. No. 7e-82;
Matches 155; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 MAAGSITTLPALPEDGSGAPPPGHFKDKPKRLCYCKNGGFFLRHDPGRVDGVREKSDPHI 60
DB 42 MAAGSITTLPALPEDGSGAPPPGHFKDKPKRLCYCKNGGFFLRHDPGRVDGVREKSDPHI 101
OY 61 KLOLAEEGKGVYIKGVCANRYLAMKEDGRLASKCVTDECFEERLESNNYNTYRSRY 120
DB 102 KLOLAEEGKGVYIKGVCANRYLAMKEDGRLASKCVTDECFEERLESNNYNTYRSRY 161
OY 121 TSWYVALKRTGYKLGSKTGPQKALFLPMSAKS 155
DB 162 TSWYVALKRTGYKLGSKTGPQKALFLPMSAKS 196

RESULT 2
ID 0925A3 PRELIMINARY; PRT: 153 AA.

AC 0925A3;
DT 01-DEC-2001 (TREMBlrel. 19, Created)
DT 01-DEC-2001 (TREMBlrel. 19, Last sequence update)
DT 01-DEC-2001 (TREMBlrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
GN FGF2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=FVB/N;
RT Dicks R.P., Gilep A.E.;
RT "Multiple novel variants of fibroblast growth factor 2 transcripts are
RT expressed in mouse embryos.";
RT Submitted (FEB-2001) to the EMBL/GenBank/DBJ databases.
DR EMBL: AY02551; AAK52308.1; .
DR EMBL: AY02551; AAK52308.1; .
SQ SEQUENCE 153 AA; 17024 MW; AD8163CD8FA2FAAB CRC64;

Query Match 93.0%; Score 768; DB 11; Length 153;
Best Local Similarity 94.2%; Pred. No. 1e-75;
Matches 146; Conservative 5; Mismatches 2; Indels 2; Gaps 2;

OY 1 MAAGSITTLPALPEDGSGAPPPGHFKDKPKRLCYCKNGGFFLRHDPGRVDGVREKSDPHI 60
DB 1 MAAGSITTLPALPEDGSGA-APPPGHFKDKPKRLCYCKNGGFFLRHDPGRVDGVREKSDPHI 59
OY 61 KLOLAEEGKGVYIKGVCANRYLAMKEDGRLASKCVTDECFEERLESNNYNTYRSRY 120
DB 60 KLOLAEEGKGVYIKGVCANRYLAMKEDGRLASKCVTDECFEERLESNNYNTYRSRY 118
OY 121 TSWYVALKRTGYKLGSKTGPQKALFLPMSAKS 155
DB 119 TSWYVALKRTGYKLGSKTGPQKALFLPMSAKS 153

RESULT 3
ID 060487 PRELIMINARY; PRT: 170 AA.
AC 060487;
DT 01-NOV-1996 (TREMBlrel. 01, Created)
DT 01-MAY-2000 (TREMBlrel. 13, Last sequence update)
DT 01-JUN-2001 (TREMBlrel. 17, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2 (FGF-2) (FIBROBLAST GROWTH FACTOR, BASIC)
DE (BGF) (HEPARIN-BINDING GROWTH FACTOR 2) (HBGF-2) (PROSTATROPIN)
DE (PROSTATIC GROWTH FACTOR) (FRAGMENTS).
GN FGF2.
OX NCBI_TaxID=10141;

OS Cavia porcellus (Guinea pig).
OC Eukaryota; Metazoa; Chordata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Hystriognathi; Cavidae; Cavia.
OX NCBI_TaxID=10141;
RN [1]
RP SEQUENCE OF 53-170 FROM N.A.
RC TISSUE=PROSTATE;
RA Ricciardelli C.;
RL Submitted (JAN-1996) to the EMBL/GenBank/DBJ databases.
RN [2]
RP SEQUENCE OF N-TERMINUS, PARTIAL SEQUENCE, AND ALTERNATIVE SPLICING.
RX MEDLINE=89273588; PubMed=2730645;
RA Sommer A., Moscatelli D., Rifkin D.B.;
RT "An amino-terminally extended and post-translationally modified form
RT of a 25kD basic fibroblast growth factor.";
RL Biochem. Biophys. Res. Commun. 160:1267-1274(1989).
RN [3]
RP PARTIAL SEQUENCE, AND METHYLATION.
RX MEDLINE=91322114; PubMed=1713785;
RA Burgess W.H., Bizik J., Mehman T., Quarto N., Rifkin D.B.;
RT "Direct evidence for methylation of arginine residues in high
RT molecular weight forms of basic fibroblast growth factor.";
RL Cell Regul. 2:87-93(1991).
RN [4]
RP CHARACTERIZATION.
RC TISSUE=BRAIN;
RX MEDLINE=87289686; PubMed=3475702;
RA Moscatelli D., Joseph-Silverstein J., Manejias R., Rifkin D.B.;
RT "Mr 25,000 heparin-binding protein from guinea pig brain is a high
RT molecular weight form of basic fibroblast growth factor.";
RL Proc. Natl. Acad. Sci. U.S.A. 84:5778-5782(1987).
CC -I- FUNCTION: WIDE-SPECTRUM MITOGENIC, ANGIOGENIC, AND NEUROPROTIC
CC FACTOR. IMPLICATED IN A MULTITUDE OF PHYSIOLOGIC AND PATHOLOGIC
CC PROCESSES, INCLUDING LIMB DEVELOPMENT, ANGIOGENESIS, WOUND
CC HEALING, AND TUMOR GROWTH. POTENT MITOGEN AND CHEMOATTRACTANT FOR
CC MESENCHYME-DERIVED CELLS. IMPLICATED IN THE DIFFERENTIATION,
CC PROLIFERATION, AND MAINTENANCE OF CELLS IN THE CENTRAL NERVOUS
CC SYSTEM AND IN BONE FORMATION. MAJOR ANGIOGENIC FACTOR THAT ALSO
CC ACTIVATES TUMOR NEOVASCULARIZATION (BY SIMILARITY).
CC -I- SUBUNIT: FORMS A QUATERNARY COMPLEX WITH TWO FGF1 AND AT LEAST
CC ONE HEPARIN SULFATE (BY SIMILARITY).
CC -I- ALTERNATIVE PRODUCTS: AT LEAST TWO ISOFORMS, 18 KDA AND 25 KDA
CC (SHOWN HERE). MAY BE PRODUCED BY USE OF ALTERNATIVE TRANSLATION
CC INITIATION SITES. BOTH FORMS ARE ACTIVE.
CC -I- PTM: THE N-TERMINAL OF ISOFORM 18 KDA IS BLOCKED (PROBABLE).
CC -I- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTOR FAMILY.
CC -I- CAUTION: THIS IS A CONCEPTUAL TRANSLATION; MANY FRAMESHIFTS WERE
CC INTRODUCED FROM RESIDUES 77, 88, 93 AND 149 DOWNWARD TO EXTEND THE
CC SIMILARITY TO THE HUMAN SEQUENCE AS WELL AS ON THE BASIS OF
CC PARTIAL AMINO-ACID SEQUENCING.
DR EMBL: L75974; AAB5394.1; ALT_FRAME.
DR HSSP: P09038; 1BLA.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; IL1_HBGF.
DR Pfam: PF00167; FGF; 1.
DR PRINTS: PR00262; IL1HBGF.
DR PRODOM: PD000831; HBGF_FGF; 1.
DR SMART: SM00442; FGF; 1.
DR PROSITE: PS00247; HBGF_FGF; 1.
KW Growth factor; Mitogen; Vascularization; Heparin-binding;
KW Alternative initiation; Methylation; Phosphorylation;
KW Developmental protein.
FT NON_TER 1 1
FT NON_CONS 15 16
FT CHAIN <1 170
FT CHAIN 22 170
FT INIT_MET 22 22
FT DOMAIN 11 14
FT NON_CONS 50 51
FT SITE 61 63
FT SITE 103 105
FT BINDING 50 51
FT BINDING 105 105
25 KDA BASIC FIBROBLAST GROWTH FACTOR.
18 KDA BASIC FIBROBLAST GROWTH FACTOR.
FOR 18 KDA FORM.
POLY-ALA.
CELL ATTACHMENT SITE (POTENTIAL).
CELL ATTACHMENT SITE (POTENTIAL).
HEPARIN (BY SIMILARITY).
HEPARIN (BY SIMILARITY).

FT	BINDING	143	159	HEPARIN (BY SIMILARITY) .
FT	MOD_RES	4	6	METHYLATION (MONO- OR DI-) .
FT	MOD_RES	5	6	METHYLATION (MONO- OR DI-) .
FT	MOD_RES	8	8	METHYLATION (MONO- OR DI-) .
FT	MOD_RES	88	88	PHOSPHORYLATION (BY SIMILARITY)
FT	MOD_RES	136	136	PHOSPHORYLATION (BY SIMILARITY)
Q4	SEQUENCE	170 AA:	18354 MW:	F36IBDVC736E5FEED CRC64;

Query Match	89.8%;	Score 742;	DB 11;	Length 170;
Best Local Similarity	91.6%;	Pred. No. 8e-73;		
Matches 142;	Conservative 3;	Mismatches 4;	Indels 6;	Gaps 1;

QY	1	MAASITTLPALPEDGGSGAFPPGHEFDKPKLYCKNGGFRLRHPDGRVDCVRKSOPHI	60
Db	22	MAASITTLPALPEGGGGAFAPGHFKDP-----NGFFFLRIHPDGRVGVREKTPHII	75
QY	61	KLLOAERGVSILKGYCANRYLMKKEDGILLASCYTDECFEERLESNNYNTRYRSKY	120
Db	76	KLLOAERGVSILKGYCANRYLMKKEDGILLASCYTDECFEERLESNNYNTRYRSKY	135
QY	121	TSWVALKRTGOYKLGSKTGPQKAILFLPMASKS	155
Db	136	SSWVALKRTGOYKLGSKTGPQKAILFLPMASKS	170

RESULT	4		
ID	Q90Y92	PRELIMINARY;	PRT, 155 AA.
AC	Q90Y92;		
DT	01-DEC-2001 (TREMBLrel. 19, Created)		
DT	01-DEC-2001 (TREMBLrel. 19, Last sequence update)		
DT	01-DEC-2001 (TREMBLrel. 19, Last annotation update)		
DE	FIBROBLAST GROWTH FACTOR-2.		
GN	FGF-2.		
OS	Cynops pyrrhogaster (Japanese common newt).		
OC	Eukaryota; Metazoa; Chordata; Crinetata; Euteleostomi;		
OC	Amphibia; Batrachia; Caudata; Salamandroidae; Salamandridae; Cynops		
OX	NCBI_TaxID=8330;		
RN	[1]		
RP	SEQUENCE FROM N.A.		
RA	Susaki K., Nakamura K., Chiba C., Saito T.;		
RT	"Expression of FGF2 during newt retinal development and		
RT	regeneration.";		
RL	Submitted (JUL-2001) to the EMBL/GenBank/DBJ databases.		
DR	EMBL: AB064664; BAB63249.1; ..		
DR	SEQUENCE 155 AA; 17278 MW; 2B583058538ABD09 CRC64;		

Query Match	85.2%	Score 704	DB 13	Length 155
Best Local Similarity	85.8%	Pred. No. 9.7e-69		
Matches 133, Conservative	9	Mismatches 13	Indels 0	Gaps 0

[illegible]

RESULT	5	
07767		
07767	PRELIMINARY;	PRT; 130 AA.
ID 07767	AC	
DT 01-NOV-1998	(TRENBLrel. 08, Created)	
DT 01-NOV-1998	(TRENBLrel. 08, Last sequence update)	
DT 01-JUN-2001	(TRENBLrel. 17, Last annotation update)	

DE BASIC FIBROBLAST GROWTH FACTOR (BFGF) (FGF-2) (HEPAIN-BINDING GROWTH
DE FACTOR 2) (HBGF-2) (PROSTATROPIN) (PROSTATIC GROWTH FACTOR)
DE (FRAGMENT).
DE BFGF.
OS Canis familiaris (Dog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Carnivora; Fissipedia; Canidae; Canis.
OX NCBI_TaxID=9615.
111

RP SEQUENCE FROM N.A.
RC TISSUE=ADRENAL GLAND;
RA Trochta O.A., Jacobs R.M., LaMaire J.;
RT "The role of c-fos in canine Hemangiosarcoma."
RL Submitted (APR-1998) to the EMBL/GenBank/DBJ databases.
C 1-11 DIVISION, INTERGENOMIC ATTEMPTS AND NEUROENDOCRINE

CC -1 FORMATION: WIDE SPECTRUM MITOGENIC, ANGIOGENIC, AND NEUROPHILIC
CC FACTOR, IMPLICATED IN A MULTITUDE OF PHYSIOLOGIC AND PATHOLOGIC
CC PROCESSES, INCLUDING LIMB DEVELOPMENT, ANGIOGENESIS, WOUND
CC HEALING, AND TUMOR GROWTH. POTENT MITOGEN AND CHEMOTACTIC FOR
CC MESENCHYME-DERIVED CELLS. IMPLICATED IN THE DIFFERENTIATION,
CC PROLIFERATION, AND MAINTENANCE OF CELLS IN THE CENTRAL NERVOUS
CC SYSTEM AND IN BONE FORMATION. MAJOR ANGIOGENIC FACTOR THAT ALSO
CC ACTIVATES TUMOR NEOVASCULARIZATION (BY SIMILARITY).
CC -1 SUBUNIT: FORMS A QUATERNARY COMPLEX WITH TWO FGFR1 AND AT LEAST
CC ONE HEPARAN SULFATE (BY SIMILARITY).
CC -1 FUNCTION: FORMS A QUATERNARY COMPLEX WITH TWO FGFR1 AND AT LEAST
CC ONE HEPARAN SULFATE (BY SIMILARITY).

CC -1- SIMILARITY: BELONGS TO THE HEPARIN-BINDING GROWTH FACTORS FAMILY.
 DR EMBL: AF060562; AAC35912.1; -.
 DR HSSP: P09038; 1BFF.
 DR InterPro: IPR002209; HBGF_FGF.
 DR InterPro: IPR002348; IL1_HBGF.
 DR Pfam: PF00167; FGF_1.
 DR PRINTS: PR00262; IL1HBGF.
 DR ProDom: PD000831; HBGF_FGF; 1.
 DR SMART: SM00442; FGF_1_FGF; 1.
 DR PROSITE: PS00247; HBGF_FGF; 1.

KM	Growth factor; Mitogen; Vascularization; Heparin-binding;
KM	Phosphorylation; Developmental protein.
FT	NON_TER 1 1
FT	SITE 21 23 CELL ATTACHMENT SITE (POTENTIAL).
FT	SITE 63 65 CELL ATTACHMENT SITE (POTENTIAL).
FT	BINDING 10 11 HEPARIN (BY SIMILARITY).
FT	BINDING 65 65 HEPARIN (BY SIMILARITY).
FT	BINDING 103 119 HEPARIN (BY SIMILARITY).
FT	MOD_RES 48 48 PHOSPHORYLATION (BY SIMILARITY).
FT	MOD_RES 96 96 PHOSPHORYLATION (BY SIMILARITY).
FT	NON_TER 130 130
QO	SEQUENCE 130 AA; 14902 MW; 219000876E878FADA CRC64;

Query Match	82.6%;	Score 682;	DB 6;	length 130;
Best Local Similarity	97.7%;	Pred. No. 1.9e-66;		
Matches 127;	Conservative	2;	Mismatches 1;	Indels 0;
				Gaps 0;

[illegible]

RESULT	6
Q9BDX1	
ID	Q9BDX1
AC	Q9BDX1;
DT	01-JUN-2001 (TREMblrel. 17, Created)
DT	01-JUN-2001 (TREMblrel. 17, Last sequence update)
DT	01-DEC-2001 (TREMblrel. 19, Last annotation update)
DE	BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).

OS Macaca mulatta (Rhesus macaque).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Primates; Catarrhini; Cercopithecoidea;
OC Cercopithecoidea; Macaca.
OX NCBI_TaxID=9544;
RN [1]
RP SEQUENCE FROM N.A.
RA Sekhon H.S., Keller J.K., Spindel E.R.;
RT "Alterations in Collagen and Elastin Gene Expression in Fetal
Pulmonary Vessels in Monkeys Following Prenatal Nicotine Exposure: A
Possible Role of alpha7 Nicotinic Acetylcholine Receptor in Persistent
Pulmonary Hypertension."
RL Submitted (Mar-2000) to the EMBL/GenBank/DBJ databases.
DR EMBL; AF251270; AAK37962.1; -.
DR HSSP; P09038; 2FGF.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
FT NON_TER 1 1
FT SEQUENCE 111 AA; 12633 MW; EC0967A5261F5487 CRC64;
SQ

Query Match
Best Local Similarity 70.8%; Score 585; DB 6; Length 111;
Matches 111; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 43 IHPDGRVGVREKSDPHIKLQLAEEGVVSIGVCANRYLAMKEDGRLLASKCVTDEC 102
DQ 1 IHPDGRVGVREKSDPHIKLQLAEEGVVSIGVCANRYLAMKEDGRLLASKCVTDEC 60
OY 103 FFERLESNNNTYRSKRTTSYVALKRTGQYKLGSKTGPQKAILFLPMSA 153
DQ 61 FFERLESNNNTYRSKRTTSYVALKRTGQYKLGSKTGPQKAILFLPMSA 111

RESULT 7
O98TDB PRELIMINARY; PRT; 125 AA.
AC O98TDB;
DT 01-JUN-2001 (TREMBlrel. 17, Created)
DT 01-JUN-2001 (TREMBlrel. 17, Last sequence update)
DT 01-DEC-2001 (TREMBlrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR-2 (FRAGMENT).
GN FGF-2.
OS Cynops pyrrhogaster (Japanese common newt).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Caudata; Salamandroidea; Salamandridae; Cynops.
OX NCBI_TaxID=8330;
RN [1]
RP SEQUENCE FROM N.A.
RA Mizuno N., Hayashi T., Kondoh H., Okamoto M.;
RT "Cynops fibroblast growth factor-2."
RL Submitted (Oct-2000) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB049625; BAB40835.1; -.
DR HSSP; P09038; 1BFG.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
FT NON_TER 1 1
FT SEQUENCE 125 AA; 14244 MW; 5C27F41DC6E60C13 CRC64;
SQ

Query Match 68.6%; Score 567; DB 13; Length 125;
Best Local Similarity 87.1%; Pred. No. 5.9e-54;

Matches 108; Conservative 7; Mismatches 9; Indels 0; Gaps 0;
OY 32 LYCKNGGFFLRHPDGRVGVREKSDPHIKLQLAEEGVVSIGVCANRYLAMKEDGR 91
DQ 2 LYCKNGGFFLRHPDGRVGVREKSDPHIKLQLAEEGVVSIGVCANRYLAMKEDGR 61
OY 92 IASKCVTDECFEERLESNNNTYRSKRTTSYVALKRTGQYKLGSKTGPQKAILFLP 151
DQ 62 IASKCVTDECFEERLESNNNTYRSKRTTSYVALKRTGQYKLGSKTGPQKAILFLP 121
OY 152 SAKS 155
DQ 122 SAKS 125

RESULT 8
O9N1S7 PRELIMINARY; PRT; 108 AA.
AC O9N1S7;
DT 01-OCT-2000 (TREMBlrel. 15, Created)
DT 01-OCT-2000 (TREMBlrel. 15, Last sequence update)
DT 01-DEC-2001 (TREMBlrel. 19, Last annotation update)
DE BASIC FIBROBLAST GROWTH FACTOR (FRAGMENT).
GN BFGF.
OS Capreolus capreolus (Roe deer).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Cervoidae;
OC Cervidae; Odocoileinae; Capreolus.
OX NCBI_TaxID=9858;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=TESTIS;
RX MEDLINE=20532861; PubMed=11078967;
RA Wadener A., Blotner S., Goritz F., Fickel J.;
RT "Detection of growth factors in the testis of roe deer (Capreolus
capreolus)."
RL Anim. Reprod. Sci. 64:65-75(2000).
DR EMBL; AF152587; AAF73226.1; -.
DR HSSP; P09038; 4FGF.
DR InterPro; IPR002209; HBGF_FGF.
DR InterPro; IPR002348; IL1_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; IL1HBGF.
DR PRODOM; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
FT NON_TER 1 1
FT NON_TER 108 108
FT SEQUENCE 108 AA; 12399 MW; 6BC7B7244214567E CRC64;
SQ

Query Match 67.9%; Score 561; DB 6; Length 108;
Best Local Similarity 98.1%; Pred. No. 2.2e-53;
Matches 106; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

OY 42 RIHPDGRVGVREKSDPHIKLQLAEEGVVSIGVCANRYLAMKEDGRLLASKCVTDEC 101
DQ 1 RIHPDGRVGVREKSDPHIKLQLAEEGVVSIGVCANRYLAMKEDGRLLASKCVTDEC 60
OY 102 FFERLESNNNTYRSKRTTSYVALKRTGQYKLGSKTGPQKAILFL 149
DQ 61 FFERLESNNNTYRSKRTTSYVALKRTGQYKLGSKTGPQKAILFL 108

RESULT 9
O925A1 PRELIMINARY; PRT; 109 AA.
AC O925A1;
DT 01-DEC-2001 (TREMBlrel. 19, Created)
DT 01-DEC-2001 (TREMBlrel. 19, Last sequence update)
DT 01-DEC-2001 (TREMBlrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
GN FGF2.

OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=FVB/N;
RA Dicks R.P., Griep A.E.;
RT "Multiple novel variants of fibroblast growth factor 2 transcripts are
expressed in mouse embryos."
RL Submitted (FEB-2001) to the EMBL/GenBank/DBJ databases.
DR EMBL; AY027558; AAK52310.1; -
SQ SEQUENCE 109 AA; 12388 MW; 61074ADE3303C860 CRC64;

Query Match 59.3%; Score 490; DB 11; Length 109;
Best Local Similarity 97.9%; Pred. No. 1.2e-45;
Matches 94; Conservative 2; Mismatches 0; Indels 0; Gaps 0;

OY 60 IKLOLAEEGRGVSIKVCANRYLAMKEDGRLLASCKVTECEFFERLESNNYNTYRSRK 119
DB 14 IKLOLAEEGRGVSIKVCANRYLAMKEDGRLLASCKVTECEFFERLESNNYNTYRSRK 73
OY 120 YTSWYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
DB 74 YTSWYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 109

RESULT 10
OY25A2 PRELIMINARY; PRT; 112 AA.
AC OY25A2;
DT 01-DEC-2001 (TREMBLrel. 19, Created)
DT 01-DEC-2001 (TREMBLrel. 19, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE FIBROBLAST GROWTH FACTOR 2.
GN FGF2.
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RC STRAIN=FVB/N;
RA Dicks R.P., Griep A.E.;
RT "Multiple novel variants of fibroblast growth factor 2 transcripts are
expressed in mouse embryos."
RL Submitted (FEB-2001) to the EMBL/GenBank/DBJ databases.
DR EMBL; AY027557; AAK52309.1; -
SQ SEQUENCE 112 AA; 12725 MW; B00557ABE0257CCB CRC64;

Query Match 58.8%; Score 486; DB 11; Length 112;
Best Local Similarity 97.9%; Pred. No. 3.3e-45;
Matches 93; Conservative 2; Mismatches 0; Indels 0; Gaps 0;

OY 61 KILOLAEEGVYSIKVCANRYLAMKEDGRLLASCKVTECEFFERLESNNYNTYRSRK 120
DB 18 KILOLAEEGVYSIKVCANRYLAMKEDGRLLASCKVTECEFFERLESNNYNTYRSRK 77
OY 121 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 155
DB 78 TSMYVALKRTGOYKLGSKTGPQKAILFLPMSAKS 112

RESULT 11
P79706 PRELIMINARY; PRT; 101 AA.
AC P79706;
DT 01-MAY-1997 (TREMBLrel. 03, Created)
DT 01-MAY-1997 (TREMBLrel. 03, Last sequence update)
DT 01-DEC-2001 (TREMBLrel. 19, Last annotation update)
DE BASIC FGF (FRAGMENT).

OS Cynops pyrrhogaster (Japanese common newt).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Amphibia; Batrachia; Caudata; Salamandroidea; Salamandridae; Cynops.
OX NCBI_TaxID=8330;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=EMBRYO;
RA Suzuki A.S., Tabata T., Sakeguchi K., Takabatake T., Takeshima K.,
Kaneda T.;
RT "Serial expression of the genes in a mesoderm-inducing ectoderms of
early Cynops gastrula."
RL Submitted (NOV-1996) to the EMBL/GenBank/DBJ databases.
DR EMBL; D89443; BAA13958.1; -
DR HSSP; P09038; 4FGF.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF; 1.
DR PRINTS; PR00262; ILLHBGF.
DR ProDom; PD000831; HBGF_FGF; 1.
DR SMART; SM00442; FGF; 1.
DR PROSITE; PS00247; HBGF_FGF; 1.
FT NON_TER 1 101
FT NON_TER 101 101
SQ SEQUENCE 101 AA; 11907 MW; 74A16C866C1FA57A CRC64;

Query Match 57.6%; Score 476; DB 13; Length 101;
Best Local Similarity 87.1%; Pred. No. 3.6e-44;
Matches 88; Conservative 7; Mismatches 6; Indels 0; Gaps 0;

OY 29 PKRLCKNGGFELRIHPDGRVDSVRKSPHILQLOAEEGRGVSIKVCANRYLAMKED 88
DB 1 PKRLCKNGGFELRIHNSDQKVDGAREKSDSYIKLOAEEGRGVSIKVCANRYLAMKED 60
OY 89 GRLLASCKVTECEFFERLESNNYNTYRSRKYTSWYVALKR 129
DB 61 GRLLASCKVTECEFFERLESNNYNTYRSRKYTSWYVALKR 101

RESULT 12
ID 007659 PRELIMINARY; PRT; 146 AA.
AC 007659;
DT 01-NOV-1996 (TREMBLrel. 01, Created)
DT 01-NOV-1996 (TREMBLrel. 01, Last sequence update)
DT 01-JUN-2001 (TREMBLrel. 17, Last annotation update)
DE FIBROBLAST GROWTH FACTOR.
GN BFGF.
OS Gallus gallus (Chicken).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasianinae;
OC Gallus.
OX NCBI_TaxID=9031;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=93246053; PubMed=7683281;
RA Borja A.Z., Zeller R., Meijers C.;
RT "Expression of alternatively spliced bFGF first coding exons and
antisense mRNAs during chicken embryogenesis."
RL Dev. Biol. 157:110-118(1993).
RN [2]
RP SEQUENCE OF 52-85 FROM N.A.
RX MEDLINE=90382254; PubMed=2401202;
RA Mitran E., Gruendbaum Y., Shohat H., Ziv T.;
RT "Fibroblast growth factor during mesoderm induction in the early chick
embryo."
RL Development 109:387-393(1990).
DR EMBL; M95706; AAA48616.1; -
DR EMBL; X56804; CAA40139.1; -
DR HSSP; P09038; 2BFG.
DR InterPro: IPR002209; HBGF_FGF.
DR InterPro: IPR002348; ILL_HBGF.
DR Pfam; PF00167; FGF; 1.

Query Match 39.7%; Score 328; DB 4; Length 114;
Best Local Similarity 100.0%; Pred. No. 5.3e-28;
Matches 59; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
OY 1 MAAGSITTLPALPEDGSGAFPFGHFKDPKRLCKNGGFFLRHDPDGRVDGVREKSDPH 59
|||||
56 MAAGSITTLPALPEDGSGAFPFGHFKDPKRLCKNGGFFLRHDPDGRVDGVREKSDPH 114
|||||

Search completed: June 7, 2002, 14:46:14
Job time: 630 sec

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